

Fig.1



Fig.2

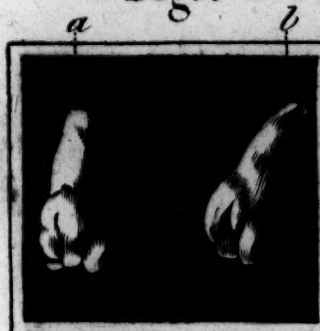


Fig.3



Fig.4



Fig.5



Fig.6



Fig.7



Fig.8



Fig.9



Fig.10



70 P. f.
549. f. 25
4

PRACTICAL
OBSERVATIONS.

ON THE
HUMAN TEETH.

By R. WOOFFENDALE,
SURGEON-DENTIST, LIVERPOOL.

K.

L O N D O N,

Printed for J. JOHNSON, N^o. 72, St. Paul's Church-Yard,
and Messrs. RICHARDSON and URQUHART, Cornhill.

MDCCLXXXIII.

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OBSEVATIONS

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P R E F A C E.

WHATEVER relates to the Teeth is so little generally known and understood, that every attempt to elucidate the subject, which is the direct result of practical knowledge, must have its use.

THE following Observations were collected in consequence of the suggestions of numerous friends, as well in as out of the profession of medicine, and now published at their request. I do not

mean to offer this as a complete treatise of the teeth ; that would be foreign to my present intention : yet I flatter myself the various affections of the teeth, and their relative connections, are enumerated and distinguished in a manner sufficiently explicit, familiar, and comprehensive for general information ; that being my design ; and that few essential circumstances will be found to have escaped me.

THE practical observations here stated may be relied on, being derived from direct observations during the course of an extensive practice, and since I completed my instructions with Mr. *Berdmore*.

I AM aware that, by making public the various circumstances relating to the teeth, and the operations to be performed
on

P R E F A C E.

v

on them, and of exposing some of the impositions and deceptions too often used, I shall draw upon myself the malevolence of ignorant pretenders to the *dentist's art*. To these I have nothing to say. Men of that profession, of liberal minds, will not want an apology: as exposing the various means used for imposture in the profession, appears the most likely method of fixing it on a more solid and liberal foundation, than has yet been done.

As the whole is designed for unlimited public inspection and information, attention has been had to adopt such terms and modes of expression as are suited to general comprehension.

THE A.C.T.

on their, and of exposing some of the
impediments and obstructions to the
work, I shall have upon myself the
responsibility of making arrangements to be
made. As to these I have nothing
to say. Men of that kind of heart
mind, will not wait for apology.
Exposing the various things which are
done in the world, and the many
things which are being done in a more
and better manner, and for the
good.

As the whole is done for the
edification of the church and the
world, and for the good of the
human race, and for the glory of
God, it is to be done with a
pure heart and a good conscience.

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The BINDER is desired to place the Plate to face Page 14 of the Introduction.

E R R A T A.

Page 78, line 6, *for the more, read the finer.*

81, 10, *for most commonly, read sometimes.*

103, 21, *for causes, read cause.*

107, 2, *after exposed, read and the membrane or periosteum of the roots destroyed.*

INTRODUCTION.

A DESCRIPTION of the HUMAN TEETH, so far as relates to their NUMBER and RELATIVE SITUATION with each other.

TO begin with those in the upper jaw. The two teeth that present themselves in the front of the upper jaw, are known to many by the name of *butter teeth*. I shall here call them the two *front teeth*, or *first incisors*.

THE two next teeth, one adjoining each of the front teeth above mentioned, are the *second teeth*, or *second incisors*.

THE

THE two next, one adjoining each of the second teeth, are the *eye-teeth*.

THE next to these are the four *small double teeth*, or *small molares* or *grinders*; two on each side behind each of the eye-teeth; and are all of the same shape and size, or nearly so; they have each two roots, frequently so connected as to be apparently but one.

THE next to each of the last small double teeth, is the first large *double tooth*, or *molare* or *grinder*, one on each side, having three roots.

THE next to each of the first large double teeth, is the *last large double tooth*, or *molare* or *grinder*, likewise with three roots.

AND the next to each of the last large double teeth, are the *dentes sapientiæ*;
they

they have three roots, which are shorter than any other, and generally connected through their whole substance: these are the last teeth in the head, and complete the whole upper row.

THE teeth in the *under jaw* correspond in shape and number, and are distinguished by the same titles with those in the upper, the number of roots to the double teeth, and the dentes sapientiæ, excepted; having each only two roots: as likewise the four front teeth in the under jaw, which are all of a size, or nearly so, and smaller than the four front teeth in the upper jaw.

THE above description comprehends the whole number of teeth of the second set in the mouth of an adult, or grown person, viz. thirty-two.

THE

THE number of roots to each tooth above mentioned, are what they generally have, yet the front and eye-teeth have sometimes two (see plate, fig. 6 and 7;) we likewise meet with the double teeth with four, and even five roots; but such circumstances are uncommon.

An EXPLANATION *of the* PLATE.

FIG. 1. Is a representation of two *supernumerary* teeth of a young lady, accompanying the second set of the upper jaw. They appeared through the gum when she was about ten years old: I took them out about a year after. The two front teeth in the upper jaw were by nature placed at such a distance as to permit these two teeth to come between them. (*a*) and (*b*) represent the front view, as they grew in the mouth. (*c*) and (*d*) the side

side view of each tooth. The hollows seen in the ends of the roots were not there when they were first taken out. The roots were complete in size. The parts which are now seen wanting, had the appearance of a soft cartilaginous substance; which the roots of all teeth have before they become ossified.

FIG. 2. Represents a *supernumerary* tooth of a young man, about seventeen years of age. It grew between the front teeth in the upper jaw. (a) The front view. (b) The side view.

FIG. 3. Represents a *supernumerary* tooth of a girl about ten years old. It grew between the two front teeth in the upper jaw. (a) The front view. (b) The side view.

FIG. 4. Represents a *supernumerary* tooth of the under jaw, accompanying the

the first set, of a boy six years of age ; and joined to the eye-tooth. The tooth on the right of (*a*) is the supernumerary one. (*a*) Represents the front view. (*b*) The side view.

FIG. 5. Represents a second tooth of the second set of the upper jaw on the left side with a crooked root. The enamelled part of this tooth was situated in a regular position with respect to that of the other teeth in the same jaw. It was taken out on account of an inflammation, and being loose. (*a*) Represents the front view. (*b*) The side view. This tooth was taken from a gentleman about thirty years of age.

FIG. 6. Represents an *incisor* of the second set of the under jaw, with two roots. (*a*) The front view. (*b*) The side view.

FIG.

FIG. 7. Represents an *eye-tooth* of the second set of the under jaw, with two roots. (a) The front view. (b) The side view.

FIG. 8. Represents an *eye-tooth* of the second set of the upper jaw on the left side, the enamel of which is indented or marked with the small-pox. This tooth, although here represented as decayed, is perfectly sound. It was taken from a young lady about twenty years of age.

FIG. 9. Represents an incisor of the second set of the under jaw, on the right side: the end of the enamelled part is altered in shape by the small-pox. The front view (a) represents on the upper part of the enamel an appearance similar to an excrescence proceeding from about the middle of it; which is the part altered

b

tered

tered by the small-pox : the part below this mark was not affected by the disease.

The whole tooth is perfectly sound.

(*b*) Is the side view. This tooth was taken from a boy about thirteen years of age.

FIG. 10. Represents an incisor of the under jaw enveloped in tartar, which was the cause of its being taken out. (*a*) Represents the front view, with a portion of the tartar taken off to shew the tooth. (*b*) The side view. (*c*) The back view. Where the tartar appears fractured in the back view, a piece of tartar, as large as the whole of what is here represented, which is the tooth with the tartar on it, was broken off in the extraction of the tooth. It was drawn on account of an inflammation occasioned by the pressure of the tartar on the soft parts under the tongue ; and which extended

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tended to the tongue, occasioning great pain.

N. B. The figures represented at 8, 9, and 10, are not introduced here, as being appearances seldom met with. I have seen great numbers of such. I happened by accident to have them by me at the time the others were engraved.

OBSER-

INTRODUCTION

It is the purpose of this book to present a

series of lectures on the history of the

United States of America.

The first lecture will be on the

early history of the country.

The second lecture will be on the

growth of the country.

The third lecture will be on the

present state of the country.

OBSERVATIONS

ON THE

TEETH.

Of CHILDREN BORN *with* TEETH.

CHILDREN are seldom born with teeth; all I ever saw or heard of, were of the incisors, or fore-teeth, of one or both jaws. Some years since, I was desired to attend a child which had been brought into the world, by an eminent surgeon, about a fortnight before. When it was born, it was strong and healthy; but had continued crying, almost without intermission, from the

B

time

2 *Observations on the Teeth.*

time of birth till I saw it : some medicines had been ordered, but without benefit. One of the front teeth, of the under jaw, had been discovered projecting out of the gum when the child was born ; and, as such circumstances are not very common, the surgeon thought the pain might probably be occasioned by it ; and desired I might examine it ; which I did, very attentively : it proved sound, and on feeling the point of it with my finger, I perceived it to be sharp, which induced me to examine the lips ; they however did not appear injured by it ; but on examining the tongue, I found a deep wound in the under part of it, that had been made by the sharp edge of the tooth, which I took out immediately ; and, with the care of the surgeon, the child soon got well. Had I not fortunately discovered this circumstance, I believe the child would have lost its life by it.*

* THIS child's tooth was not a supernumerary one, but one of those that generally come through the gum some months after birth : that is, one of the first set.

Of LANCING the GUMS of young Children.

FROM the time of birth, till between two and three years old, children are liable to pain from the growth of their teeth. The six teeth in the front of each jaw, are what cause the most pain, from the obstruction which they meet with in making their way through the periosteum, or membrane,* which commonly occasions an increased flow of saliva, fever, heaviness of the eyes, and general oppression. If the gums are not properly lanced at this time, convulsions, and other unfavourable symptoms generally follow, and death occasionally closes the scene.

I HAVE seen children have a considerable discharge of offensive matter from the internal

* WHEN a child is born, the teeth are infolded in this membrane, which has a great share of sensibility and feeling, and which is the cause of pain, when irritated by the passage of the teeth through it.

4 *Observations on the Teeth.*

part of the ear with every tooth they got. They often have a discharge from behind the ear also: but in neither case ought the discharge to be stopped while the urgent symptoms of dentition continue. Some children have an eruption upon the head with every tooth they get.

DURING the time children are suspected to be getting teeth, costiveness should be particularly prevented; which is very common at the beginning and commencement of the symptoms of teething; yet, sometimes, a looseness comes on spontaneously, and becomes very severe for a long time. Medicines seldom check this looseness effectually and to advantage; yet it frequently abates considerably after lancing the gums.

It is sometimes necessary to repeat the lancing of the gums, for one tooth only, a dozen times, or more; which I have often done; and, in general, each repetition has given relief. Repeated experience proves, that a tooth has no more difficulty in making its way

way through a gum that has been repeatedly lanced, than through that which has not been lanced at all; although the tooth may not appear through the gum for two, three, or four months after the operation.

WHEN the teeth of a young child are suspected to be the cause of pain, the gum, where the pain is, should be lanced so as to touch the tooth with the instrument. The incision should be made transversely, across the gum, otherwise the operator is liable to miss the tooth (except it happens to be very near the surface of the gum); by which means the advantage of lancing the gum is, in part, lost. In general, when this operation is the most necessary, the gums are but little, if at all, inflamed to appearance.

WHEN the gum, or gums, of a young child are to be lanced, the dentist who knows what teeth to expect, will readily judge of the part where the incision should be made. A gum-sream, is the instrument I use for this purpose;

6 *Observations on the Teeth.*

and I think it the best adapted to the intention.*

ACCORDING to the bill of mortality, the deaths in London, from the 15th December 1778, to 14th December 1779, were 20420: out of which number 7261 were under two years old; which is considerably more than one third of the whole number that died within that time. The above observations respecting the first teeth, may, in some degree, account for the death of so large a proportion under two years of age; although, no doubt, many out of this number died of other diseases.

THE teeth of young children are frequently suspected to be the cause of pain when they are not so.

* I NEVER saw the least inconvenience occasioned by the lancing of the gums of young children; and, when the operation is performed with judgment, the pain is very trifling and scarce worth notice. The operation is likewise performed with great ease to the operator; as the instrument, if a good one, penetrates the gum very readily, and without much force, notwithstanding it may be requisite, as it frequently is, to go pretty deep.

At

AT three years old, children have got all their first teeth; twenty in number; ten in each jaw: however, weakly children sometimes do not get them all till after the third year; and strong healthy children have often got theirs by two years old, seldom sooner.

Of the TEETH, from Three to Six Years old.

DURING this period, in general, little attention of the dentist is required, except frequently to examine the double teeth, which are very subject to decay, and which should be filed, or stopped with gold, as circumstances may indicate.

FROM three years old, children should be taught to brush their teeth and gums with cold water; and to rinse the mouth with it afterwards, morning and evening; which practice ought to be continued *through life*.

Of STOPPING decayed Teeth with GOLD.

IN the last observation, I have mentioned stopping the teeth with gold. For several years after I practised, as a dentist, I used lead for this purpose ; but I frequently observed the lead, used in stopping a tooth, either by myself or others, to be in a corroded state in a short time after the stopping had been performed. To account for this circumstance, I considered, that lead, when exposed to an acid, soon corrodes, and then becomes poisonous. As the use of vinegar and other acids in the food are so common, and as it is well known that people are often troubled with acidities in the stomach, which frequently rise into the mouth, the lead used in stopping teeth, is, I apprehend, corroded,* in which poisonous state it must frequently

* THE lead in this case partakes and becomes of the nature and quality of white-lead, which is well known to be highly poisonous when taken into the stomach.

quently be carried into the stomach, to the detriment of health. I do not mention this as necessarily and always happening where lead is used; I have seen teeth that have been stopped with it for several years, to appearance, not altered; but as this may not frequently be the case, I think it safer to use gold.

THERE is another reason for using gold for this purpose, which, although of much less real importance than the above, yet may with some be thought sufficient to give it a preference; and that is; when a tooth is stopped with lead, it generally looks black and like a decayed tooth, allowing the lead to remain unaltered and not corroded as above-mentioned; but when stopped with gold, it always looks well, and of its natural colour.

THE stopping of decayed teeth with any metallic substance, is sometimes objected to,

stomach. The process in making white-lead is similar to this under our consideration, as it is the corrosion of lead by the means of vinegar.

because

because it does not always stay in through life. I have observed that some teeth decay in such directions that no method can be used to prevent a farther progress of the decay; and that some which are decayed and stopped with gold, when the greatest attention, both with respect to time and care, in the operation, either in the first or second set of teeth, cannot insure success. But as the operation is generally performed without the least degree of pain, and with a great probability of success, I always recommend it, when practicable; as many decayed teeth, when stopped, are as serviceable through life, as if they had not been decayed. To succeed in this operation, much depends upon the skill and care of the operator; for if the tooth is not stopped so completely as to prevent not only the smallest portion of food, but even the *residuum* of the saliva, from getting into the caries, or faded part, such tooth will decay faster than if it had not been stopped at all. Many teeth begin to decay with several holes at once in each tooth, particularly the large grinders; so that if one, or two, of these
holes

holes only are stopped, and the others omitted when in a proper state, the holes which are not stopped will, each of them, decay just the same as if the others had not been stopped; by which omission, very little benefit is obtained: therefore all the other holes ought to be stopped, as soon as they will admit of it.

If a decayed tooth is stopped with gold, as completely as possible, and the person cracks nuts, or such like hard substances, with the teeth, that part of the tooth which was stopped will be liable to break; by which the stopping will come out. The cracking of nuts, or other hard substances, is known frequently to break sound teeth; therefore no wonder it should break those that are stopped, and in a state less capable of enduring such violence.

Of using COLD WATER to the Teeth.

AS cold water will be here recommended to be used daily to the teeth through life, it may not be improper to make some observations on its effect on the teeth. If the human body is relaxed, bathing in cold water is generally found to brace and strengthen it: and if we want to produce relaxation in any part, bathing in warm water has that effect. There is no substance that I know of (water excepted) but what occupies a larger space by the application of heat, and a less one by the addition of cold. I apprehend the pores of the enamel, as also the bony parts of the teeth, to be affected in this manner by the application of cold or heat. I have observed, that those persons who have made a practice of using cold water daily for the teeth from childhood, in general have few decayed teeth; and, that when they do decay, the caries advances slowly, and generally with little or no pain. I have also
found

found that those people who have used warm water in the like manner, have had their teeth in general decayed early in life, the caries advance quickly, and commonly with much pain.*

* PEOPLE who live in northern climates are less subject to have decayed teeth than the inhabitants of warmer climates. Although it may be observed that both good and bad teeth may be seen in all climates, I would be understood, that the teeth are more found in general in cold than warm climates. Those who live in large towns in this kingdom, have their teeth decayed more frequently than they who live in the country; which may be accounted for from the air of large towns being much warmer than in the country, the inhabitants likewise indulging more in warm liquids. For example, tea, twice a day, drank hot, undoubtedly is detrimental to the teeth. The inhabitants of towns also live more upon animal food than those of the country, and it has been proved, by experience, that corrupted animal food is more destructive to the teeth than vegetable food in the same state.

Of OFFENSIVE BREATHS.

THIS disorder (if I may be allowed the expression) to which many people are subject, at all times of life, may proceed from various causes; as, ulcerated lungs; venereal infection; mercurials, either internally, or externally, used; and all feverish disorders: but, when occasioned by such causes, is, seldom, of long duration. The prevailing one, and which is of long continuance, is owing, either to the teeth, or the scurvy in the gums; when it frequently prevails through a person's life (if proper means are not used to prevent it, and the teeth remain so long in the head), to the annoyance of every one they converse with, or come near. Persons whose breaths are offensive, seldom know it themselves; and it is not often that their most intimate friends will make so free as to inform them of it. I frequently meet with persons whose breaths are so offensive, that it is with difficulty I can bear to come
near

near them; occasioned by the teeth or gums:* nor did I ever meet with a person, whose breath was in the above state, and when the teeth or gums were the cause, but I could, in a short time, remove it, and preserve it sweet for the future, provided the person will undergo the necessary operations, and follow strictly such directions as I should lay down for the future. But, it too often happens that, when a dentist has done all that is necessary in this complaint, the patients are negligent, by which they are soon as bad as before.

It is not uncommon to see the teeth of some persons nearly covered with a slimy, mucous substance, of a green, black, or yellow colour;†
which

* WHEN persons breaths are offensive, they are the most so to those who happen to be with them in a carriage. I have frequently been much incommoded, at such times, even when the glasses have been down; but when they have been up, the air in the carriage has, in a few minutes, become intolerable.

† THIS substance is deposited from, and is the *residuum* of, the saliva. If the teeth and gums are brushed
quite

16 *Observations on the Teeth.*

which is one cause of offensive breath, and which frequently is the case when there is not one decayed tooth in the mouth that can occasion it. This is to be remedied by having the teeth properly cleaned by a careful dentist, and using daily, a brush dipped in water; (if the person is ill, warm water may be used, but not

quite clean on going to bed at night, on passing the finger along their outer surface upon waking in the morning, a slimy, mucilaginous substance may be found adhering to them, of the consistence of new made starch; varying a little in consistence and quantity in different constitutions. The reason why this slimy substance collects in greater quantity during the night than in the day time, happens from the inaction of the mouth while sleeping; whilst the motion of the lips and mouth when awake, in speaking, eating, drinking, &c. prevents its perceptible accumulation.

THIS substance is liable to collect in unusual quantities on the teeth of lying-in-women, sick persons, and on all occasions where there is a disposition to fever, and by which the saliva can become inspissated or hardened; and which is the frequent cause of a disagreeable taste in the mouth in these situations.

THE real nature of this substance has not been (I have reason to think) generally known and understood.

else)

else) and afterwards in a proper *dentifrice*,* with which the teeth are to be brushed.

ANOTHER cause of offensive breath, is, decayed teeth: the food, in mastication, lodging in the caries, or hollows, and not being removed until it becomes putrid. Were these hollows, or caries, stopped, as mentioned in page 8; or filed, cut, or scraped, (should the caries be so formed as not to admit of stopping,) in such a manner as might enable the person to take out any lodgment that might be formed there, (and which he could not remove, till such operation was performed,) he might then prevent such future lodgments, and by that means avoid an offensive breath, from this cause.

* DENTISTS have in general various preparations under the title of *dentifrice*, *tooth-powder*, *electuary*, &c. &c. which, for many reasons, they preserve as secrets; and each, no doubt, recommends his own. I have a preparation of that sort (*dentifrice*) peculiar to myself, which I have used for many years; and as it has always answered my utmost wishes, I hope I may stand excused recommending it for this purpose.

IT may not be improper to observe, that a decayed tooth is seldom, *if ever*, offensive of itself; it is the lodgment of food in it that makes it so; and which lodgment, also, occasions its farther decay. I have frequently seen people with every tooth in the mouth decayed; who, by having the necessary operations performed, and paying proper attention themselves to cleanliness, have had the breath free from any disagreeable smell, to which they had before been subject. If the breath is offensive from any of the above causes, the methods here set down will be sufficient to keep it sweet, if properly put in practice.

THE breath will frequently become offensive by the scurvy in the gums, when the teeth are no way the occasion of it; which will be particularly noticed when we come to treat of the scurvy in the gums.

I HAVE been informed, that in countries subject to the plague, the strictest attention is paid to keeping the places inhabited as sweet and
clean

clean as possible. The same methods are recommended where putrid, epidemical disorders prevail; and as far as I have been able to inform myself, when either of these dreadful disorders attack a country, or district, that the teeth or gums of the inhabitants are not so much as suspected being in any-wise the cause of increasing either of those afflictions: although, from what has been said above of offensive breaths, and what will be observed when we come to treat of the scurvy in the gums, it will appear, that the air which many people take into the lungs, is constantly impregnated with putrid exhalations arising from food lodging in decayed teeth, or between sound ones; as also from putrid blood or matter in the gums, occasioned by the scurvy in them; and which may add to the inveteracy of malignant diseases.

IN countries afflicted with these disorders, particularly the former, I have read, that (and if my memory does not fail me, it was) in the southern provinces of Russia, the physicians and magistrates use their utmost endeavours to

cause every thing they can conceive the least likely to become soon putrid, to be removed to a distance from any inhabited place, and there buried deep in the ground. It is, in my opinion, very common for those who take the most active part in these humane and necessary offices, as well as they who inhabit such places, to receive a quantity of highly putrid exhalation, proceeding from their own teeth and gums, which must always become injurious.

WE frequently meet with a fleshy substance apparently growing in the decayed part of a grinder, or double tooth. This does not however originate there; but is occasioned by the tooth decaying within and near the edge of the gum, through which caries, or decayed part, the gum insinuates itself; and when such substance is seen in the large caries of a tooth, in the grinding surface, its appearance is as if it had grown from the bottom of the caries.

WHEN such substance is seen, it is necessary to extract the tooth; for should it be extirpated
by

by the knife, or reduced by the actual cautery, it will soon make its appearance as before.

IF the portion of the gum which has insinuated itself into the decayed part of a tooth, as above related, is pricked, or cut, the blood produced by such operation will be found putrid.

THE continual breathing of air contaminated with putrid effluvia of food in decayed teeth, or between sound ones, will, I apprehend, be the means of producing some, and of increasing many other, diseases.

From Six to Twelve Years old.

*Of taking out the SHEDDING, or FIRST
TEETH.*

THE advantage of taking out the first teeth, at proper times, will be very considerable, as it will prevent the second set coming

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crooked,

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crooked, which they are subject to do : some projecting forwards ; some inclining inwards ; others riding one over the other, altogether, or in part ; some twisted half round, presenting the side edge where the front ought to be, which gives a very awkward appearance : but which are not the only inconveniences : for, by coming in the above mentioned crooked direction, they cannot be kept clean, consequently are more liable to decay ; and, for want of that regularity in the teeth, so pleasing to the sight, the mouth is frequently crooked, and the shape of the face much altered. By introducing the finger under the lip of a person whose teeth grow in an irregular order, it may be observed that the irregularity continues nearly to the extremity of the root of such teeth. This observation proves, that the bony socket is altered by irregular teeth : and we find in skeletons, that the shape of the bony socket is uneven, when the teeth are irregular.

PERSONS whose teeth grow in this disagreeable manner, are desirous of hiding from view,

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as much as possible, the deformity, with the lips; by which means they generally acquire an ungraceful habit of drawing the mouth on one side; and sometimes of endeavouring to draw the upper and under lip, so as to conceal, as much as possible, all the teeth in the mouth; which has a formal and unpleasant effect, and prevents that freedom and ease in conversation which they would enjoy if freed from such restraint.—Even, regular teeth are one of the greatest ornaments of “the human face divine”—give an elegance and expression to the countenance—and contribute, in an essential manner, to the beauty and regularity of the face; as, without such aid, the harmony of the most perfect set of features would be incomplete.

WAS proper attention paid to the removal of the first set of teeth, the just symmetry and proportion of the second might be preserved; and consequently every inconvenience and defect arising from irregularity would be avoided. The usual time of beginning to remove the first

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teeth, for the purpose of making room for the succeeding set, is about the age of six years. It may be necessary to mention, in this place, that the time generally observed by nature for supplying us with the four eye-teeth, (I mean of the second set,) that is, of their appearance through the gum, is about the eighth or ninth year. I have seen several instances, where they did not appear before the age of twenty-one; and one, where one of them did not appear till the person was upwards of sixty years of age. This latter was not a tooth of a third set; as the other three eye-teeth came at the usual time; and, till this appeared, there had been a deficiency.

WHEN the teeth come irregular, and have been neglected for some time, they frequently may be reduced into proper order with safety. This operation often takes some months, if the teeth are much out of their places. The younger the patient, the better, when this operation is to be performed. There is a method of performing it very expeditiously, by twisting the teeth into their places, by means of a pair of strong
pliers.

plyers. This method is practised by some; but it may not be improper to observe, that the patient is liable to have the bony socket split, or the teeth broken or forced out in the operation: yet allowing none of these accidents to happen, they often remain loose and troublesome ever after. This is an operation I never performed in this mode; and at present, I am of opinion I never shall: it bespeaks a want of humanity, honour, or professional knowledge in the dentist who performs it in such a manner; as methods much more safe, easy, and efficacious may be practised.

WITH all the circumspection and art a dentist can use in the removal of the first set of teeth, he cannot (as far as my observations have informed me) at all times be certain that the eye-teeth will come in their proper places, when they do not appear sooner than the age of fourteen, sixteen, or eighteen years; for, at those years, if the eye-teeth are not come out of the gum, the first double teeth, and the second teeth in the upper jaw, are generally close together, or nearly so; and those in the under
jaw

jaw are also the same. Under these circumstances, it is sometimes (although not always) advisable to take out either the first double, or the second single, teeth, to give room for the progress of the eye-teeth. Sometimes the progress of the eye-teeth is (when a tooth is taken out for that purpose) effected by nature, without any other assistance; at other times art is required.

Of being UNDER-JAWED.

THIS is a circumstance often seen, and which produces a disagreeable effect when it takes place; it is occasioned by the front teeth of the under jaw projecting before the front teeth of the upper one. There are very few cases of this kind (I believe not one in a hundred) that might not be remedied or prevented by the dentist, allowing he has the care of the teeth from six to fourteen years of age. When circumstances
of

of this nature are neglected in early life, the under jaw becomes considerably lengthened during its growth; and the front teeth in both jaws are generally rendered useless in mastication.

I HAVE not often found the under jaw to project before the upper one in children, while they had their first teeth only.

WHEN persons are under-jawed, and intend having them reduced, they should first reconcile themselves to submit to such a process as will be necessary to perfect the cure; which is often attended with very little pain, and the operation is completed in a week or fortnight; although it will sometimes require some months to perfect it.

WHEN this operation is to be performed, the younger the patient is, the better.

It is impossible to give directions for reducing the under jaw when it projects before the
upper

upper one, as it is rare to see two cases circumstanced exactly alike.

I HAVE seen some persons whose under jaws have been too broad for the upper ones (but not too long;) those parts of the large double teeth in the under jaw which should be opposed to the grinding surfaces of those in the upper jaw lying against the side of the tongue, and the grinding surfaces of the large double teeth in the upper jaw coming in contact, in mastication, (or when the teeth in each jaw touch,) with that side of the large double teeth in the under jaw that should lay against the cheek: the cause is, the double teeth in the upper, occupy too small a space for those of the under jaw.

THERE are some persons whose upper and under front teeth never touch each other; therefore are of no use in mastication. This inconvenience may sometimes be remedied; but, as in the two immediately preceding cases, the method of proceeding will be so variable, according to circumstances, that it is not in my
power

power to lay down any given rule to proceed by.

I HAVE met with some few instances of the teeth in the front of the upper jaw occupying too large a space for the teeth in the front of the under jaw.* This inconvenience may generally be relieved, by reducing the number of teeth in the upper jaw; and, sometimes, without extracting any teeth.

ABOUT the sixth year, two *large* double teeth, in each jaw, make their appearance through the gum, behind the double teeth of the first set, one on each side. It is common to discover on the grinding surface of these four teeth, and on their first appearance through the gum, several small holes, or hollows, in the enamel of each of them; often six, eight, or more. As these teeth, as also the teeth which come

* I NEVER saw one instance, where the front of the upper or under jaw was too small to contain all the first or second set of teeth with which nature supplies us, allowing that there were no supernumerary teeth.

behind

behind them, are not succeeded by any others when, from any cause, they are lost; so the small holes above-mentioned ought to be stopped as soon as possible after they are discovered, otherwise each hole daily enlarges a little, by the food lodging in them, till they all or most of them meet, and break into one; whereby the teeth continue to decay, and are for ever lost. This advance of the caries (or decay) if not stopped early, is often so quick, that at seven or eight years old the teeth are so much decayed, and give so much pain, it is necessary to take them out. These teeth are the largest in the head, except those which come next to, and immediately behind them, viz. one adjoining each of these. And as they are of so much importance, and ought to last through life, they become objects of our regular and constant attention.

WHEN the grinding surfaces of *any* of the large double teeth decay, they almost always begin with several small holes in each tooth; and, if each hole, or caries, is not stopped at a proper time,

time, they all break into one ; as mentioned above ; which is the reason that some of those teeth are oftentimes suddenly discovered with one large hole or caries in them.

I OBSERVE that some children's second teeth are very liable to decay, though all the care possible of the dentist is used to prevent it. Their appearance, while decaying, is frequently nearly the same as when a human tooth is put into a solution of the strong spirit of vitriol with water, or any other acid, either mineral or vegetable ; and which I apprehend is occasioned by the too free use of acids, or sugar, which is particularly and readily disposed to turn sour in the human body.

I HAVE frequently seen teeth injured by using gargles for the throat, which contained the vitriolic acid.

THE front teeth in the upper jaw of the second set, are often decayed at the interstices where they join together, a year or two after they

they make their appearance. Filing, cutting, or scraping, with circumspection, (these are delicate operations, and should be performed with great care,) generally prevents their farther decay. When any of these operations are performed, so that the whole of the caries, or decayed part, is removed, it is not uncommon to see the same part become again decayed and black in one, two, or three years; and, sometimes, in two or three months after the operation was performed: but, when this happens, it is owing to the patient's negligence, (when proper directions have been given) and not keeping the part clean. When these operations have been performed, the person afterwards should be careful to remove, daily, any small portions of food that may lodge in those places from whence the decayed part was taken: this is generally done with the best effect by a butcher's common wood-skewer (cut by the patient in such a shape, as that it will get to the bottom of the part from whence the decayed part had been taken,) and to bruise the end of it a little, after it is formed of a proper shape, which will make it like a brush.

brush. This simple and familiar expedient I think preferable to a real brush, (however formed,) the *Dragon*, or prepared *Marshmallows-root*. Was this rule strictly attended to by persons who undergo the operation, such teeth would rarely decay afterward. Those who even clean their teeth daily, are too liable, in general, to neglect the part from whence the decay was taken; and should those teeth decay after filing, the patient generally blames the dentist. The above observation will, however, I hope, shew, that their farther decay (when the operation has been well performed) is generally occasioned by the patient's own negligence.

*Of the Effects of the SMALL-POX on
the TEETH.*

THERE will be a disagreeable appearance in the teeth of some persons when all the care possible of the dentist has been used; these are, indentures, and yellow marks in the
D enamel

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enamel of the teeth, resembling worm-eaten holes, which, sometimes, gives the appearance of excrescences growing out of their ends, and whereby they become serrated or jagged. These *indentures* and *yellow marks* of the human teeth, are more common at this period than formerly; to account for which, I have been at some pains to ascertain a cause; and I believe my endeavours have not been in vain.

It is now the general custom to inoculate children for the small-pox, at about three years old; as, at that age, they have got all their first teeth, and have no risque to run from teething. The result of my observations is, that those persons, who have such appearances in their teeth, have had the small-pox, either by inoculation, or naturally, (for it makes no difference in what manner they receive the infection) before the age of six years. I have frequently observed that those teeth of the second set have been most marked when the person has had the disorder from one, to four years old; somewhat less from four to six; and least of all soon after birth: the first teeth are, however, often marked
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when the small-pox has happened at this latter age, but which is of little consequence, as they are to be shed and succeeded by the second set. At this early age, the second set, I believe, is not affected by the small-pox. It may be proper to observe, that all children, who have the small-pox at any of the above periods, have not their teeth thus marked in consequence thereof, as I have seen many who have had that disorder within that time, whose teeth were not affected by it.

I HAVE frequently seen these marks on both the first and second set of teeth, which causes me to suspect such children have had the small-pox twice.

I HAVE also seen many people whose teeth have had these marks on them, who have been known to have had the small-pox after the second teeth were all come out of the gum, at which time, I believe, it is impossible for the small-pox to affect the enamel of the teeth. I have observed it is the enamel of the teeth, only, that is generally

injured, as I have seldom seen a case where the root, or the bony part under the enamel, was altered from its original appearance; though the enamel was, at the same time, much injured, and the bone under it exposed. I have seen many persons whose teeth have been much marked by the small-pox, who yet have had the disease in the most favourable manner, with very few of the pustules, or pock; which is not to be wondered at, as the eruption is frequently partial; so much, that it has been known to fall so severely upon the eyes as to endanger and even destroy the sight, when every other part of the body, externally, has been almost free from pustules.

THE yellow marks which are seen through the enamel of the teeth, when occasioned by the small-pox, are the bony part of the tooth, which becomes exposed by the partial destruction of the enamel.

THESE yellow marks of the teeth must not be confounded with those which are to be seen

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on the enamel, and which frequently go through it; as, in such cases, the enamel is entire and not injured in the smallest degree.

To account for the teeth being thus affected by the small-pox, it must be considered, that the teeth in embryo, or at their first formation, are in a soft, pulpy state (and continue so some time after birth;) during which time, only, they can be affected by the small-pox: the dints, or hollows, seen in them appear like the pits in the face that are caused by the small-pox: the teeth appear perforated, and as if pieces of the enamel had been taken out; and I have not been able to discover why the enamel should suffer from this cause, while the bony part under it almost always escapes unhurt, and the root of the tooth very seldom receives the least injury; speculative reasons excepted, which it is my intention to avoid.—The shape of these indentures are various; some being large, others very small.

THE two second teeth in the upper jaw, have frequently a hollow in each of them, on that

part of the enamel rather inclining towards the front teeth, and about their middle, reckoning from the gum, or where the enamel begins, to the cutting edge of the enamel. These are natural hollows at the first formation of the teeth, and not occasioned by the small-pox. I do not recollect ever seeing any other of the teeth with these natural hollows.

THE above observations on indented, stunted, and discoloured teeth, are not drawn from a few instances; many hundred cases have regularly occurred in a practice of upwards of fourteen years.

I APPREHEND there are but few people whose teeth are marked in the above manner, but who may be known to have had the small-pox, though the persons themselves whose teeth are so marked, nor their friends, never knew they had the disorder.

THE teeth, thus injured by the small-pox, are often liable to decay, if not early prevented, by stopping, &c. &c.

I HAVE

I HAVE several times remarked, that it often happens that the teeth which have been marked by the small-pox, do not grow out of the gum so quick as those that have not been marked by it; sometimes, not more than one sixth, or eighth of the enamelled part of such tooth appearing through the gum in six or twelve months from its being first seen through the gum. I likewise have observed, that the four small double teeth of the second set of each jaw, are often not marked when all the incisors (or fore-teeth), eye-teeth, and first large double-teeth are much marked by the small-pox. I have not been able to conceive any satisfactory reason for either of the above peculiarities; the second particularly: perhaps the first may happen in consequence of the teeth being in a diseased or unhealthy state, whereby their progress becomes retarded.

WE are informed in a treatise published by *Mr. Berdmore, on the Disorders and Deformities of the Teeth and Gums*, page 199, that the

second set of teeth “ are frequently affected and
“ even destroyed by the inflammations, suppu-
“ rations, and other disorders occasioned by the
“ first dentition.” *And at p. 201,* that “ some-
“ times the resistance or pressure of the milk-
“ teeth only produces indentures, or hurts the
“ shape of the succeeding set.”

AND after giving directions for the manage-
ment of the succeeding set, the author says,
p. 211 : “ Thus we may, in general, be preserv-
“ ed from diseased, stunted, indented and dis-
“ coloured teeth.”

I APPREHEND the author is mistaken with re-
spect to the cause of *indented, stunted, and dis-*
coloured teeth ; I shall relate one circumstance to
prove it, viz. The four large grinders, or double
teeth, which appear through the gum about six
years old, are more frequently *indented, stunted,*
and *discoloured* than any teeth in the head ; and
where these come, there never were any *before*
in their places ; neither are they *succeeded* by
others

others growing under them; and therefore *surely* cannot be injured by any supposed pressure of *other teeth*? These four grinders also are often marked, in the manner above mentioned, and not one tooth in the head beside.

IN the growth of these teeth it is uncommon to have *pain*, except sometimes in a very small degree occasioned by the rising tooth causing a slight irritation of the gum on its forcing its way through the gum: I never saw one of these teeth where there was suppuration in any stage of its progress: and at the time the gum is irritated by the forcing of the rising tooth, the whole enamelled part of it is so far formed, that it is, I believe, impossible for *inflammation, suppuration, pressure, obstruction, or any other affection* to have any injurious effect on the tooth, at this period, so as to produce the appearances described by the above author.

I HAVE been informed, that some dentists will promise that a child shall have a fine set of
teeth, ■

teeth, provided they have the entire care of them at a proper age. I believe no person who has the *entire* care of a child's teeth, can prevent the above-mentioned stunted, indented, and discoloured appearances of them (except *early* inoculation will have that effect, and that within *two months* after birth.) Or, if the teeth are small, that is, narrow, the breadth not being in proportion to the length,* or have a yellowish, or dark coloured enamel, it will not be in the power of any one, safely, to alter them. Any person that will make such a promise, I apprehend must be ignorant of his profession, or destitute of honour and integrity. There are people who are readily caught with such promises, or many other specious improbabilities, who will pay little attention to many things founded on reason, experience, and plain matter of fact.

* NARROW teeth have an unmeaning appearance; whilst, on the contrary, broad teeth, if of a proper length, add a dignity, and give expression to the countenance.

It will be proper for a dentist to examine the teeth every month, at least, from six to twelve years of age. It may not be necessary to perform any operation on the teeth every time he sees the child; but, by this means, the different disorders will be duly watched, and proper methods used to check them on their first appearance.

THE most material time, to be particularly attentive to the teeth, is, from six to twelve years old. Little or no attention is paid to the teeth, in general, till sixteen, seventeen, or eighteen years of age, and sometimes much later; when, it often takes some time to stop the ravages such neglect has caused. Daily observation, for several years, convinces me, that the human teeth, of the second set, are most liable to decay soon after they make their appearance: that every succeeding year they acquire a solidity, which causes them to be less subject to decay: and that, in general, if they can be preserved sound, or, if decayed, from penetrating to the nerve, (which in general
may

may be done,) till the twentieth or twenty-fifth year, they rarely decay afterward; having, by that time, acquired so solid a texture, as to resist, in a great degree, the action of putrid food, the general decayer of the human teeth. When a tooth first becomes painful from a caries or decay, after this time of life, (the twentieth or twenty-fifth year,) it does not happen in consequence of a sudden decay within a few weeks or months before the pain is perceived, but to its decaying generally between the age of six and fourteen, but, most commonly, between six and ten; at which time, the teeth sometimes decay a little, and, without even any care, go no farther for five, ten, or twenty years, and so on, to seventy or eighty years of age, or upwards; but at any of those periods they may give pain, by the exposure of the nerve, from a disposition, at the time, in the tooth so decayed, to extend the caries, or mortification, to the nerve. I never saw an instance of a tooth giving pain as soon as it began to decay. The front teeth seldom give pain when they decay, at any period; when they do, it is generally from the inflammatory tooth-ach.

THESE

THESE observations evince the necessity of the teeth being particularly attended to in the early part of life. It is not uncommon for two large double teeth to decay at the sides where they unite; and generally both decay at the same time, although the progress of the decay is commonly much greater in one than the other. If the teeth are *properly* attended to, from three years old, the large double teeth, and the dentes sapientiæ (which are the farthest in the head, and very seldom appear before the sixteenth year, and with some persons they never appear during life) may generally be prevented from decaying to the nerve, there not being that difficulty, in the opinion of some, in preventing these teeth from decay at their interstices and where they unite: yet, for want of necessary attendance and assistance at proper periods, we often find these teeth decayed to the nerve; the decay in the tooth not being, in many cases, seen till one tooth is out.*

Of

* It is not, in general, very difficult for a dentist to be perfectly satisfied of the double teeth being decayed at their interstices; for although it should happen
between

Of the Care necessary from TWELVE Years.

AT this age, though sometimes about ten, and not often sooner, four large double teeth appear through the gum, one behind those mentioned above which come about six years of age. From twelve years old, it is requisite to have the teeth examined every three months, at least, that, if any of them decay, they may have the necessary operations performed on them, to prevent the caries from getting to the nerve; as likewise to remove any small portions of tartar that may have adhered to the teeth, and which often is not perceived by the person himself, till a large quantity of that matter is accumulated. The operation of removing the tartar, should be performed with

between a dens sapientiæ and last large molar (which are the two last, or farthest, teeth in the head) whereby he is often prevented making the discovery by the sight; yet the use of a proper instrument will enable him to do it with tolerable certainty.

much

much care, lest the enamel of the teeth be hurt in the operation.*

I FIND a material difference in the consistence or hardness of the enamel of teeth; some are of so soft a nature, that they will scarcely bear touching with the edge of an instrument, without a part of the enamel being cut off by it; while the enamel of some teeth is very hard; and there is of every degree between these two extremes.

THERE is, exclusive of the stony concretions which gather on the teeth, (of which there are various kinds often in the same mouth,) frequently a thin discoloured substance or matter,

* MR. BERDMORE informs us, in his *Treatise on the Teeth*, &c. p. 264, “that the enamel of the teeth is as hard as the hardest steel.” I have frequently made steel so hard, by the assistance of fire and water, that no steel instrument could be made to cut it, till softened by heat, and which is known to any one acquainted with the properties of steel; but I never met with the enamel of a tooth which I could not cut with an instrument or file.

on a part of the enamel, (seldom on the whole of it) of a green, olive, yellowish, or black colour, which looks something like a thin varnish. This is neither of the tartarous kind, nor yet what is produced by the residuum of the saliva; and it is very seldom that it can be removed by an instrument, without taking a part of the enamel off at the same time; but may be removed with safety, by the use of a proper *dentifrice*, or tooth powder.

SOME people imagine, that the tartar ought never to be removed from the teeth by the dentist's instrument, more than once during their whole lives, for fear of injuring the teeth. I acknowledge that the hardest enamel, on the human teeth, *may* be cut entirely off with ease. But I likewise declare, that those teeth which have the softest enamel may, with the greatest safety, have the tartar taken from them with instruments, once every week, was it found necessary: the care requisite, not to injure the teeth in the operation, must be with the person employed. If he is a man of honour, and master of his profession, he will do *no* injury.

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IN a late publication on the teeth, by Mr. Ruspini, *second edit.* p. 77, we are informed there is a *green* tartar which gathers on the teeth. I have always considered the tartar, which is collected on the human teeth, to be a petrified or stony substance, which differs much in solidity: I have found some as soft as chalk, others so hard, that I have frequently broke a well tempered instrument in removing it: I have also observed it of every intermediate degree: I have seen tartar of so light a colour, as nearly to resemble that of the teeth; some of a very dark brown, bordering on black; and of every shade between. I rather think the writer must give the name of tartar to the green varnish-like matter above-mentioned, p. 48; if that is what he means, it does not consist of stony particles; for my own part, I never saw any green tartar adhering to the teeth, nor any other green substance, except what I have mentioned above.

INSTRUMENTS for cleaning the teeth, in the hands of skilful and honest persons, never do

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harm.

harm. Many people dare not trust an instrument for the purpose of cleaning their teeth in any hands except their own, being confident they shall act with so much caution, as not to do the least injury: this confidence, however, creates considerable employment for the dentist. In my own practice I have frequently experienced it; for, after some time, from not having a perfect knowledge of what should or should not be done, some part of the teeth are cut and injured, whence pain and caries often follow, and, in the end, loss of teeth.

WHEN instruments for cleaning the teeth are used, it should, in my opinion, be by those who are in the constant practice of so doing. I have always found the joint aid of practical and theoretical knowledge necessary in this, as well as all other parts of the profession of a dentist.

Of the TOOTH-ACH.

WHATEVER causes pain of the teeth, let it proceed from what cause it will, is included under the name of tooth-ach; which I shall describe in the manner and various shapes it has appeared to me in practice.

THE tooth-ach may be divided into the different kinds of *inflammatory*; *common*; *rheumatic* or *nervous*; *sympathetic*; and from *denudation*.

THE species of tooth-ach which generally occurs in the earlier period of life, is of the *inflammatory* kind, for which reason I shall call it *the INFLAMMATORY tooth-ach*. This often makes its appearance at about three or four years of age: it begins with a gnawing pain about the root or roots of the teeth, and in the jaw, and most commonly attacks the double teeth: it increases till it excites inflammation, as is discoverable by a quickened pulse, some

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fever, and increased pain: the pain is continual, frequently for two, three, or four days and nights, when, the pained part begins to swell, and the pain subsides. Matter, which is commonly produced by the inflammation, is generally discharged between the gum and the tooth, and the child often gets free from pain in four or five days, but the disorder frequently returns every month or six weeks, if the tooth is not taken out, which it is generally advisable to have done soon after the first suppuration commences. I have generally found the patient relieved by applying a calf's bladder two-thirds full of milk and water, wrapped in flannel, to the pained part of the face, the face being first rubbed gently with a little sweet oil: the milk and water should be made as hot as it can conveniently be borne, and repeated as soon as it begins to cool, otherwise it may increase rather than alleviate the pain.

It is often necessary that the patients should take a dose or two of physic, as at such times
they

they are generally costive. Leeches, applied as near the seat of pain as possible, give relief, if applied at the beginning of the complaint; but if it is suffered to go on a little, the application of leeches prolongs the pain. A fig, boiled in milk, and the feedy part applied between the cheek and gum, so as to cover the part pained, generally is of service.

If the disorder does not soon yield to this treatment, bleeding with the lancet should not be omitted.

SLIGHT and repeated electrical shocks at the beginning of this complaint, I believe, will often cure it; but if given when the tooth becomes very painful, they will increase the pain. I have several times known much injury done by using preparations of lead externally to the face for the inflammatory tooth-ach.

YOUNG people, about ten or twelve years old, are subject to this species of tooth-ach; females much more so than males.

THE teeth commonly affected about this age are those above mentioned, which come about six years old, and which are often decayed when they are first seen, as before related. If the hollows, or decayed parts are stopped as soon as possible after they appear, and the stopping remains in, the children seldom have this kind of tooth-ach of those teeth, it being prevented by that means.

THE *inflammatory tooth-ach* is not confined to young people; we often observe it in every stage in life. When one tooth only is attacked, the pain frequently extends to the neighbouring teeth; and sometimes to the glands of the throat, by which they are considerably enlarged. I have several times stopped a decayed tooth when the inflammation has subsided, and a return of the pain has ever after been prevented by it: yet sometimes, although but seldom, the pain has returned at the end of a month or two, and the patient has been obliged to have the tooth drawn.

WHEN

WHEN this disorder happens to a decayed tooth (for sometimes it attacks sound teeth, though but seldom) I apprehend it is occasioned by the external air getting into the decayed part of the tooth, and obstructing the lymphatic vessels of the tooth, or affecting the nerve.*

An inflammation of the periosteum will, independent of any affection of the nerve or vessels of the tooth, occasion this species of tooth-ach; and which sometimes happens from cold caught, or from costiveness: when from cold, such medicines as will remove the cold, will relieve the

* OR the artery, or blood-vessels; for I have been informed by an eminent anatomist that he could not, on the closest examination of the roots of teeth, discover a nerve; and therefore concludes, that what is supposed to be so is blood-vessels; and that the pain proceeds from these vessels. I do not take upon me to determine this point, but in consequence of such information, I have since taken notice, several times, that in destroying the nerve (or what is generally understood to be so) of an incisor or eye-tooth with the actual cautery, it has been sensible to the slightest touch of that, or any other instrument, till two or three drops of blood were produced, and that the tooth often lost its sensibility in a few seconds afterward.

pain of the tooth: and when from costiveness, a dose, or two, of opening physic will often remove it: it being a leading maxim in physic—"remove the cause, and the effects will cease."

SHOULD the tooth be decayed so that it cannot be stopped, it ought to be drawn, to prevent a return of the pain, which often happens every month or two, if the tooth is left in.

WHEN the inflammatory tooth-ach begins, it generally increases till it suppurates: and it is not, in my opinion, advisable to attempt extraction till the suppuration commences. Some recommend it in the increase of the inflammation, when the patient is in the greatest pain. By the inflammation of the periosteum above mentioned, the roots of the teeth are in a manner wedged tight in their sockets by the enlarged size of the vessels of the periosteum, so that the tooth is liable to be broke in the extraction: but, exclusive of this, the pain a person suffers in having a tooth drawn in this state of
of

of the disorder, is very often excruciating, and frequently continues so for some time after; whereas, was the tooth left in till the inflammation subsided, or the suppuration commenced, the pain of drawing would be trifling, in comparison to that which is felt when the extraction is made during the increase of the inflammation.*

WHEN a tooth is drawn in this state, it is common to see the membrane of the root much

* WHEN the inflammatory tooth-ach attacks a sound tooth, I have frequently found lancing the gum pretty deep three or four times, at the distance of twenty-four hours, cure it, so as not to return. It never happens that this operation has the same effect on a decayed tooth; for though the gum may heal after repeated lancing, there is always a collection of matter about the extremity of the root or roots, which corrodes them, as may be discovered by examining the roots of those teeth when taken out. By frequently lancing a gum-boil, it sometimes happens that the gum-boil disappears, and that that part of the gum looks well; but, in that case, the matter that was discharged by the gum-boil, before the lancing, is now confined in the socket about the root of the tooth as here related.

enlarged,

enlarged, particularly that part which covers the extremity of the root; and sometimes the membrane which lines the socket will come out, adhering to the root or roots of the tooth. I apprehend these appearances may have induced some persons to conclude that they are caused by an enlargement of the root or roots of the tooth. I never saw but two instances of the preternatural enlargement of the roots of teeth, and they were both of the fore-teeth in the upper jaw: they did not appear diseased at all, and were taken out in consequence of being loose and becoming troublesome.

THE inflammatory tooth-ach is, in all the cases I ever saw, the origin of gum-boils; and when gum-boils are once formed, I never knew one cured so that the tooth regained its former healthy state. I likewise never knew a gum-boil remain after the offending tooth was taken out.

I HAVE

I HAVE seen some cases, but not many, where the inflammation has been very considerable without producing the least pain; the chief inconvenience the patients have experienced, was, the awkward appearance on that side of the face, which has been so much swelled and enlarged that they did not choose to be seen. Sometimes the inflammatory tooth-ach becomes alarming. I shall here relate a case, but not the only one, by many, that I have seen.

A LADY, about twenty-one years of age, applied to me about four years ago, who had an open sore in the side of her face, nearly opposite the roots of the first large double teeth of the lower jaw on the left side, from whence there was a continual discharge of matter, over which she wore a piece of black silk to conceal it. About two years before, she had been under the care of an eminent surgeon, who had taken out part of a tooth, leaving the other part in: the discharge of matter was not, however, decreased by it, nor by any other methods used. She was attended by him
three

three months without any advantage; at the end of which time she went home, she living at a distance from him. I examined the teeth, and found one root of the first large double tooth of the left side in the under-jaw which I suspected to be the cause of the complaint: the other root had been drawn by the surgeon, as mentioned above. I recommended the remaining root to be taken out, which was consented to, and the operation performed immediately. The day following the discharge from the wound was much lessened; she went home the next day; and I have since heard that she got well in a very short time, without any farther assistance.

FROM long neglect in this case, the matter had caused a loss of bony substance in the jaw, which has occasioned a depression, or hollow, in that part of the face for life, and which produces a very unsightly appearance, somewhat similar to what is caused by the kings-evil.— Had this lady's case been treated properly at
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the beginning, it is probable there would have been but little inconvenience from it.

WHEN matter is lodged in the *antrum maxillare*, I find the drawing of a tooth necessary, but the piercing the socket from whence the tooth was taken *unnecessary* (though practised by some dentists:) it generally gives greater pain to the patient to introduce an instrument into the socket when this complaint happens, than what is caused by the drawing of the tooth; and I have always found the bare removal of the tooth answer every purpose.— I am of opinion this complaint rarely happens from any other cause than the inflammatory tooth-ach, extending or being confined to the periosteum of the socket, which terminates in suppuration, and penetrates and discharges into the *antrum maxillare*.

WHEN matter is lodged in the *antrum maxillare*, it is not always discharged through the outer plate of the alveolar process, through the cheek, or between the tooth and gum. I at present

present have under my care a lady, aged about forty, who (by her own description) about ten years since had an inflammatory tooth-ach, of the first double tooth of the right side of the upper-jaw. She said at that time she suffered much pain; that some time afterwards she perceived a swelling in the roof of her mouth, which she had the resolution to cut with a pair of scissars; upon which a large quantity (as she said) of blood was discharged, and the tumor subsided. That, as the swelling returned, she repeated her operation, and always with the same event. When I examined the lady's mouth, and saw the enlargement above mentioned, (which at that time was as large as the half of a middle-sized walnut,) I apprehended it to be occasioned by the first double tooth, as mentioned above, which I took out; and introduced a probe, in nearly an upright direction, into the socket, a full inch and half, without meeting with any resistance. I then laid open the palate, from the tumor transversely to the socket, and found the inner plate of the bony socket wanting; the outer being intire.

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From the circumstances of this case there can be little doubt that, in consequence of an inflammatory tooth-ach, matter had formed in the socket of the tooth, which had penetrated through the spongy substance of the *maxillare bone* into the *antrum maxillare*, and that it had destroyed the inner plate of the bony socket, by which it had insinuated itself between the palate and palate bone, occasioning the tumor there, which, by repeated openings, gave vent to the matter, and prevented its making its exit any other way, as sometimes is the case. Had this lady's tooth been taken out early and when the suppuration first commenced, there is little doubt, in my opinion, that she would have experienced no farther inconvenience from it. That there is a communication between the remaining part of the socket and antrum maxillare, does not admit of a doubt, from the introduction of the probe; and that the whole arose from a common inflammatory tooth-ach, appears to me very evident. How this case will terminate, it may be difficult to conjecture, and no decisive opinion can yet be formed upon it.

THIS

64 *Observations on the Teeth.*

THIS patient had applied to several of the faculty, who had not observed the cause of her complaint.

I HAVE seen some cases of the above kind, but not many.

By this lady's case, I am led to suspect, that a caries of the palate bone may sometimes be the result of the inflammatory tooth-ach from the lodgment of matter (as in the case here related;) which, when in an acrid state, from confinement and in length of time, may frequently injure and destroy this bone.

*Of the Use of BLISTERS for relieving
Pains of the Teeth.*

BLISTERS are frequently recommended for all pains of the teeth. I apprehend the inflammatory tooth-ach is the only one where
blisters

blisters are in general of service ; all other pains of the teeth are commonly increased by them ; the common tooth-ach in particular. Whether they are applied behind the ears, to the neck, or back, the pain of a decayed tooth is generally more acute than before the blister was applied ; and the increased sensation of pain subsides, soon after the blister is removed. *Opiates* are frequently found to have a directly opposite effect, and to give considerable relief when applied as a plaster to the side of the face, so as to cover the part pained. A *mithridate plaster*, when applied to the face, frequently gives relief, especially on going to bed.

Of the COMMON Tooth-ach.

THIS kind of tooth-ach is simply the exposed nerve of the tooth, which gives pain on the pressure of food in mastication ;

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on its being touched with any hard substance, the application of any thing hot or cold, or the pressure of the atmosphere. Before the nerve is exposed, this complaint may generally be prevented by stopping the tooth, as recommended at *p.* 8, or filing it.

WHEN the nerve is exposed, a small bit of lint, dipped in the oil of *cinnamon*, *cloves*, *turpentine*, or any *chemical* oil, frequently gives relief, and if repeated for some time, often destroys the nerve. I have known good effects from the application of half a grain of crude *opium*, rubbed with a few drops of common water to the consistence of a bolus, with the addition of half a grain of *camphor* brought to the same consistence, introduced into the hollow part of the tooth, with a small portion of lint, and repeated daily, for eight or ten days. This should be fresh made when used, as the camphor will evaporate in a short time. I have often known this application entirely destroy the exposed part of the nerve of a tooth.

THIS

THIS kind of tooth-ach is sometimes cured by cauterizing the ear. When this kind of tooth-ach is first felt, if the person has the resolution to apply cold water to the nerve in the decayed part of the tooth several times in a day, he generally will lose the pain, provided he continues the daily use of it, which he ought to do if he had no pain of his teeth, as is recommended at *p.* 12.

THESE are the applications I have generally found the most successful of any I have tried. The quantity of remedies in common use are almost without number. Destroying the exposed nerve of a tooth by the actual cautery, is an operation I have sometimes performed with success, and many times without any. When any of the teeth that have but one root are to have this operation performed on the nerve, we can almost, with a certainty, be sure to succeed: but when a tooth has two or more roots, the success of the operation is uncertain. I have often succeeded with these latter in the first attempt, but much more frequently have

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put the patient to great pain, without the least advantage. If a person who has pain of a tooth, occasioned by the exposure of its nerve, that has more roots than one (which all teeth farther in the mouth than the eye-teeth have,) and has the resolution to cauterize the offending nerve himself (which may be done with a common knitting-needle,) it is twenty to one in favour of his succeeding before a dentist, from his being more likely to hit upon the nerve: however I am free to acknowledge I am of this opinion.

THE exposed nerve of a double tooth is frequently destroyed by practising the methods recommended in *p.* 66.

CAUTERIZING the ear is an operation I have frequently performed with advantage in the common tooth-ach, but not always. If the operation is performed with care, the pain is so trifling, whether it succeeds or not, it is scarcely worth notice.

WHEN

WHEN these operations succeed in destroying the nerve, the tooth will continue mortifying or decaying in the same manner it would have done had neither of these operations been performed, except it is treated as will be hereafter recommended in replacing decayed teeth.

*Of the RHEUMATIC or NERVOUS
Tooth-ach.*

I GIVE this name to *one* species of tooth-ach, because it generally resembles the rheumatism, or a nervous pain, more than pain occasioned by a tooth. This kind of tooth-ach frequently causes considerable pain in the *temple, ear, tongue*, and one side of the head; and in the muscles of the *neck, shoulder, arm*, and *breast*; and it is not uncommon for the pain to extend over the *whole head*, both sides of the *neck*, both *shoulders, arms*, and the whole

70 *Observations on the Teeth.*

breast and *stomach*. At this time the teeth often do not appear to be the cause of pain, being the freest from it of any part of the head. These pains sometimes come at stated periods, and observe the same regularity in going off. At other times, when they begin, they will continue a week, ten days, or more, almost without intermission, and then subside entirely for a fortnight, or longer, but return again as before. Some people during the attack of this disorder, complain of a stupor and giddiness in the head. This complaint has frequently been treated as nervous or rheumatic, with such medicines as are generally administered for those complaints, for a length of time without effect. I would, in this kind of tooth-ach, always recommend the extraction of the offending tooth, when discovered. It is not uncommon for a small portion of the root of any tooth, but more particularly the double ones, to cause this pain. When the offending tooth is drawn, the pain sometimes ceases in a minute afterward, but generally continues several hours, frequently

two or three days, sometimes a week or fortnight; and two instances I have met with, both of them in young ladies, where the pain did not entirely subside for a month after the tooth was out: but in every case, when the pain once goes off, it never returns afterwards, except from some other tooth, which is cured by its being removed. I would not have it understood that I apprehend there never are rheumatic or nervous pains in the head, or those parts above-mentioned, without being connected with, or dependent on, the teeth: I am confident that people are frequently affected with rheumatic and nervous pains in those parts; and were any, or all the teeth in the head to be drawn, the patient would not be in the least relieved by such practice. It appears to me, that those who have had pain the longest after the tooth is taken out, are they who have had it also the longest before the extraction: the adjoining and sympathizing parts, having been frequently and long irritated, require some time to recover

their former tranquil state.* The teeth which are most commonly affected with this disorder, are the dentes sapientiæ, which seldom appear sooner than sixteen years of age. If proper attention is paid to this kind of tooth-ach, I believe a dentift will seldom or never be deceived with it, if he is a man of application and attention—absolute and necessary requisites in a dentift.

Of the SYMPATHETIC Tooth-ach.

THIS kind of tooth-ach is frequently met with, and happens when the pain of one decayed tooth is transmitted to another, often a sound one; sometimes at a distant part of the

* THIS remark, although general, is not without exception: for I have known some few persons who have had this kind of tooth-ach several months, and some two or three years, and yet the pain has subsided in a minute after the extraction, and never returned afterward.

same

same jaw, or in the opposite one, not leaving the least pain in the tooth which is the cause of it. When this sort of tooth-ach happens, it commonly causes the loss of a *sound* tooth, except the dentist examines the tooth, and makes some inquiry before he attempts the extraction. Of this kind of tooth-ach I shall here relate *a case*.

A HEALTHY strong gentleman, about twenty-eight years of age, applied to me a few years ago, complaining of much pain in one of the large double teeth in the under jaw on the right side. I examined the tooth, but could find no defect in it. I perceived a small caries in the dens sapientiæ on the same side of the same jaw, which I was going to examine, but he told me he had no pain of it, and would not permit me, but desired I would take the tooth out which he complained of. Having examined it attentively, I advised him to keep it in, as I apprehended there was no prospect of relief, should it be drawn. It was twelve months afterward before I saw him again; during which time the
tooth

tooth he complained of had been drawn, which proved a sound one, and without complaint. The pain however, he said, had continued the same as before the tooth was drawn in that part of the gum from whence the tooth was taken; that he could cover it with the head of a common pin; and that he had no pain from any tooth in his mouth. He also said, that since I saw him he had frequently been obliged to live on boiled milk and bread for a fortnight, or longer, at a time; during which he was never free from pain of that particular part. With some persuasion I prevailed on him to permit me to examine the tooth (*dens sapientiæ*) above mentioned, when, we were both convinced, the pain he had so long suffered was occasioned by it: extraction was recommended; the tooth was taken out, and the pain ceased in a few minutes. I have seen this gentleman several times since, who informed me he had had no pain of his mouth since the above tooth was drawn.

I HAVE frequently known people suffer violent pain, apparently to the patient, of the teeth,
which

which has been occasioned by *tartarous matter* growing to their roots, and pressing so much on the gums as to cause such pain. By removing the *tartar*, the pain ceases. This complaint has been the cause of the loss of many sound teeth, when the person employed has been a stranger to cases of this kind.

Of the Tooth-ach from DENUDATION.

THIS kind of tooth-ach is frequently met with. It begins in the neck of the tooth, exactly where the enamel ends. When it begins, by being touched with the finger-nail, a tooth-pick, brush, or other hard substance, a pain is produced, which differs from all other pains of the teeth. It is an acute sensation, in some degree similar to what is felt when the teeth are set on edge, but much more disagreeable; and the instant such substance is removed

removed from the part, the pain ceases: the pain is most acute after eating oranges, acids, or sour fruit. I have observed some cases, but not many, where every tooth in the head has been affected in this manner. One, two, or three in a mouth, I have often seen. When this disorder first begins, the teeth are so little decayed, that I have not been able to perceive the caries, although assisted by a very good magnifying glass; the whole having the appearance of a tooth perfectly sound: the only symptom which leads to the discovery, is, their having this disagreeable sensation on being touched. But when the decay is in a farther advanced stage, it can be perceived with ease; the kind of pain being the same in both cases.

SOMETIMES this species of caries, or denudation of the teeth, advances very quick, and gets through the neck of the tooth without any or very little of the enamelled part being injured by it; and when it has been broke off by mastication, or some slight force, the greatest part of what was broke off has proved sound.

I NEVER

I NEVER observed this disorder to appear sooner than fourteen years of age.

THERE is an appearance on some teeth that may be placed under this head; it is, when the incisors, eye-teeth, and small double teeth on either side, generally of the upper jaw, lose a part of their enamel, and frequently some of the bone under it; appearing, as if the lost substance had been filed away with a round file, leaving a fine polish on the remaining hollowed part. In most cases of this kind there is no pain like the tooth-ach; and the denudation is generally near the gum. I never saw these appearances in the first set of teeth, and they are seldom to be discovered in the large double teeth.

THIS loss of substance is not a caries, or mortification of the part, it is a loss produced by friction. In every case of this kind which I have seen, the person has used some cutting preparation for cleaning the teeth by way of *dentifrice*. I have seen several, whose teeth
have

have been in this state, who never used any thing but a brush, and burnt bread powdered fine. It should be considered, that bread, burnt hard, and reduced into powder, in a great measure resembles sand, with respect to its sharp, cutting quality: the finer it is powdered, the more it will cut and polish the teeth. Any sharp powder, or paste, (it is immaterial whether dentifrices are used in powder, as a paste, or in any other form; they are not altered in effect by such change,) will cut the teeth in the same manner. Cream of tartar, when used for cleaning the teeth, has the effect of destroying them, in a two-fold degree; by friction, by which the teeth are cut or scratched by its roughness; and by its chemical power of dissolving them; as acids do, whether vegetable or mineral.

If persons whose teeth are so circumstanced, as now related, are watched attentively during the time of cleaning their teeth, it may plainly be perceived that they apply the brush, when dipped in such preparation as they use for cleaning their teeth, in a most particular manner and direction

direction to those parts where the substance of the teeth has been lost: and I have constantly observed that when a proper dentifrice has been recommended, and a different method of brushing the teeth practised, those teeth have not lost any more of their substance afterward.

THERE is a denudation of the teeth, differing from the two foregoing kinds. It begins in distinct specks on the enamel, generally on the front and middle, and near the root of the tooth; and appears as if the enamel in those parts had lost its attractive, cohesive property with the bone under it, not having that transparency which is observed in the enamel of a healthful tooth, or in the other parts of the enamel of the same tooth, and which may be scratched, or cut with the greatest ease. I have generally found this kind of denudation stopped from going farther by using daily a dentifrice which I prepare, (see page 17;) in the composition of which is a considerable portion of fine testacea—a known corrector of acids. As this treatment generally stops the
progress

progress of this disorder, I apprehend this kind of denudation must be owing to an acidity affecting and preying upon that particular part of the enamel. I have seen cases of this kind, where the bony part of the teeth did not appear to have been destroyed at all by this disorder; and some where they were.

I BELIEVE the above are the general causes of pain of the teeth: they must not however be expected *always* to be met with exactly as here described. It often happens that these disorders are complicated with each other, or are connected with disorders to which the body and constitution are subject, and ought to be well distinguished before any mode of treatment is determined upon. When pain of the teeth is occasioned by any bodily complaint, the *physician* ought to be applied to; a dentist is not the *only* person to be consulted.

Of DRAWING Teeth.

ALL teeth, or portions of teeth, may be drawn if they can be touched, (provided they are strong enough to bear the force requisite for extraction) as it is not necessary to see them.

THERE are some teeth which it is impossible to draw. This happens when the roots are crooked, or, what the dentist calls, locked in the jaw ; or when the roots of the double teeth diverge much, which most commonly those of the upper jaw do. (The large double teeth in the upper jaw have three roots, those of the under only two in general.) In which cases it does happen, sometimes, that they cannot be got out. Some teeth are so much decayed, or are in their texture naturally brittle, though but very little decayed, that they will not bear the force requisite for extraction, but break in the attempt. In any of these cases the dentist

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is generally blamed, although undeservedly. It frequently happens, that when any of these teeth break, in the attempt to extract them, the roots may be got out, with the greatest ease, in a day or two, a week, or fortnight afterward, though not at the time when the tooth breaks. Sometimes it happens that one tooth is drawn with little pain, and that the adjoining one, or any other in the same mouth, from some of the above causes, cannot be got out. I likewise frequently meet with a tooth, which gives little pain in drawing, and one, of the same size, or smaller, in the same mouth, which shall cause much pain when drawn, although not half the force is used in the operation; the cause or species of tooth-ach being in both cases alike. I have not been able to account satisfactorily for this difference.

THE bony socket sometimes adheres so firmly to the roots of some teeth, that it is not possible to extract them without a portion of it being broke in the operation; which is sometimes brought away with the tooth; at others,
it

it separates in the operation, and is left adhering to the gum ; frequently exfoliating after some days.

WHEN the bony socket is broken in the extraction of teeth, it is not of that dangerous tendency many people apprehend : for when a tooth is drawn, and *none* of the socket broken in the operation, it gradually wastes away, and is absorbed ; as may be perceived some months afterward by applying a finger to the part of the gum from whence the tooth was taken, when a hollow or depression will be discovered in that part ; and which will be most sensibly perceived in the part from whence the large double teeth had been taken.*

I NEVER saw the jaw-bone broken, by the extraction of a tooth.

* THIS circumstance is mentioned by Mr. J. Hunter in his *History of the Human Teeth*, p. 93, the second part. I therefore, do not give it as an original observation of my own.

*Of LANCING the GUM when a Tooth is
to be drawn.*

ON examining the gum when a tooth is to be drawn, I have frequently found it to have no connection with the tooth ; sometimes occasioned by the disorder which caused the pain ; at others by a venereal complaint ; and, very commonly, by the scurvy in the gums. In any of these cases, lancing the gum is needless. But when a tooth is to be drawn, particularly the double teeth of the second set, to which the gum adheres firmly, I always advise the gum to be lanced or separated from it as effectually as possible : for it may be observed when a tooth has been drawn, the gum not having been previously lanced, that it often grows so fast to the tooth, as to be torn in the operation, and will not leave it till cut from it. I have seen a tooth drawn, the gum not being first lanced, where it grew so firmly
to

to the tooth, that it would not leave the tooth, and the gum has been torn from the adjoining teeth and bony socket on each side of the tooth drawn; nor could the drawn tooth be got out till the gum was cut from it; by which much pain ensued. The lancing or separating the gum from such a tooth before it was drawn, would have prevented the inconvenience. And suppose a tooth is drawn, the gum not being lanced, and comes out without any of the gum being torn in the operation, yet I do imagine the separation of the gum by an instrument will be attended with less pain than that forcible separation which must necessarily happen in drawing without previous lancing. When the operation of lancing the gum is performed judiciously, the pain is often trifling and not worth notice.

*Of HÆMORRHAGES succeeding the Ex-
traction of Teeth.*

I BELIEVE no tooth is drawn, of the second set, to which an hæmorrhage may not succeed, whether any of the bony socket is broken in the operation, or not. The orifice from whence a tooth is taken immediately fills with blood, which generally coagulates in a few minutes after. If the coagulated blood is touched with the tongue, it causes in some a tendency to sickness, which induces them to remove it, (this coagulated blood, however, ought to remain till dislodged by the union of the gum) and immediately the blood flows as quick as ever; at the sight of which the person and friends are much terrified; and for fear of cold, the person is kept very warm, by the addition of a good fire and more cloaths; which treatment increases the discharge of blood from the orifice: to stop which, I have often found
nothing

nothing necessary but to have the additional cloathing removed, and the patient kept cool. When this treatment has not succeeded, the use of a piece of dried sponge or lint applied to the orifice, and compresses of lint or linen placed against it, so as to meet the corresponding teeth or gum, and to press on the orifice, should be used, and kept there some hours. I never had occasion to use any other means than what are here related.*

* THE hæmorrhage which follows the extraction of teeth, is generally from the double teeth: it very seldom succeeds the drawing of the incisors, or eye-teeth. If there is a discharge of blood from the part where a tooth is drawn, for half an hour, it will do no harm: should it continue longer, it ought to be stopped.

*Of Wounds of the TONGUE, LIPS, or
CHEEK, occasioned by broken or jagged
Parts of TEETH.*

THESE parts are often wounded by the sharp points or edges of broken or decayed teeth. I suspect that cancers of those parts sometimes proceed from these causes, from long neglect. As soon as they are perceived, the teeth should be filed, cut, or scraped: and, when none of these operations can be done, which, in some situations cannot, the offending tooth should be drawn, whether it is sound or decayed: for by cracking nuts, peach stones, or such like substances with the teeth, the strongest are liable to be broken, and then become troublesome without being decayed.

A GENTLEMAN applied to me about three years ago, informing me, he had been confined
about

about three months with a wound of his tongue. That he had taken several medicines; used various gargles; and had been once salivated for it; that he was accustomed to, and fond of, sweet unfermented wort, drawn from malt. On drinking it now, he found the wound of his tongue much better, and said he received but little benefit by any thing done for him till he drank this liquor; and that after he had drank it once, and found it did him no harm, he, of his own accord, and without being recommended to do it, continued drinking it three or four times a week by choice; not supposing it could be of any advantage to the tongue. He did not however get well; so was recommended to me, to examine his teeth, to see if I suspected any of them might in any degree be the cause. On examination, I perceived one of the incisors of the lower jaw inclining inwards into the mouth, the point of which was sharp; and the first large double tooth in the upper jaw, on the left side, was decayed, having the roots only left, nearly even with the gum; a few

a few jagged points, excepted, projecting from it. These I suspected had been the cause of the complaint; and accordingly recommended the extraction of them both, which was complied with. I saw this gentleman the two succeeding days, only, after; when he was much better, and went home, living at some distance in the country. I am acquainted with the gentlemen of the faculty who had attended him, and I have seen them several times since, and been informed by them, that the complaint ceased when the teeth were out; and that he had not had any return of it. The good effect of the fixed air, in the liquor from the malt, on the wound of the tongue, appears evident in this case.

Of the general Reason of the SECOND SET of Teeth coming crooked, or irregular, when the Person has had the FIRST SET taken out.

I HAVE seen numbers so circumstanced; and for the following reason. There are many parents who give themselves no concern about the teeth of their children, farther than, if one becomes loose, or gives pain, application is made to the dentist, (suppose one of the first of that profession in the kingdom) to take it out. Or farther; if a tooth is perceived to come crooked and out of its proper place, the dentist is employed to take out a tooth, to make room for that which is coming in a wrong direction. A child so circumstanced, is seen by the dentist perhaps not more than once in six, or twelve months; and sometimes only once or twice, during the time of shedding the teeth; instead of being

being seen, and the whole of the teeth examined with great attention, at *least* once a month during that period. If the parent is told, that the child's teeth are crooked, or are ranged awkwardly, the parent replies, that the child was under the care of *such a dentist*, but was no better for it; which is an ungenerous reflection, as, in cases of this kind, of which there are many, even with people of the first rank, the parent, or those who have the care of the children, are blameable, not the dentist; for was proper attention allowed to be paid to the coming of the second set of teeth, they would very seldom be irregular.

Of SUPERNUMERARY Teeth.

I NEVER observed any supernumerary teeth with the first set : except the one represented in the *plate* : with the second, however,

ever, I have seen more; but not many. A representation of some of what I have met with, may be seen in the *plate*. I have frequently seen people with a natural deficiency of one, or two, teeth; and these were of the incisors. The largest deficiency of this kind I now recollect, was in a boy, who was, when I saw him, about twelve years of age: he never had the four incisors (or fore-teeth) of the under jaw; neither was there, at that time, the least sign or appearance of any in the gum.

Of the Teeth DROPPING OUT *when* SOUND.

MANY people lose all their teeth when sound, by their falling out spontaneously. This circumstance happens from various causes; which I shall endeavour to describe. The youngest person I ever saw, who had the teeth drop out sound, was a child about five
years

years old, who lost the two front teeth in the under jaw; this was occasioned by the scurvy in the gums destroying the bony socket of those teeth, which consequently caused their loss. I was informed this child had no venereal infection from the parents or nurse; otherwise, I should have suspected *that* to have been the cause: neither had it taken any mercurial preparation for worms, which is frequently the case with children of that age. Children from two years of age, have frequently the gums affected with the scurvy; the breath at the time being very offensive. If a small portion of blood is procured from the diseased gums, it will be found to be highly putrid. When the breath of such children proves offensive, as above related, I apprehend it is often suspected to arise from worms.

THE loss of sound teeth may also be occasioned by the following causes, separately, or conjunctly; and, in some cases, the whole together.

IF

IF the accumulation of tartarous matter about the neck of the teeth should not be removed soon after its formation, it, most commonly, insensibly increases, insinuating itself farther under the gums and on the enamel, extending along the roots of the teeth, and adhering so firmly to them, as to destroy, *for ever*, the periosteum which covers the root or roots of every tooth when in a perfect state. If these concretions are not timely removed, they generally extend along the roots of the teeth, till they are fairly forced out by them; sometimes with much pain; yet sometimes without any.

ABOUT eight years since, I was desired to take the tartar from off a lady's teeth, of about forty years of age; which, on examination and inquiry, I found had filled up a vacancy that had been made by the loss of two of the front teeth in the under jaw. The front teeth in the upper and under jaw were covered with this substance, so that they could not be seen; the teeth in the under jaw particularly; that part where the
teeth

teeth were out, projecting as full and forward as where the teeth were in, even forcing the lip much more forward than it should have been. The thickness of this tartarous matter, at the cutting edges of the teeth in the front of the under jaw, was half an inch. This lady informed me, she had undergone the operation of removing the tartar once before, which was about three years before.

WHEN I had removed the tartar from the teeth, I recommended the daily use of a proper dentifrice; but as she appeared extremely fearful about her teeth, I apprehend she did not duly follow that direction. The tartar on this lady's teeth did not shew a disposition to extend along the roots of the teeth, except in a very small degree, but chiefly confined itself to the upper, or enamelled part of them, although the loss of the two teeth was occasioned by it. In removing the tartar from the teeth, care should be taken not to uncover them too precipitately; for, by so doing, people often suffer much pain for a considerable time after, by
the

the air getting to them, or on the application of any thing hot or cold. The representation of a tooth lost by the accumulation of tartar on it, may be seen in the *plate, fig. 10.*

THE *incisors* of the under jaw, are frequently the first teeth which are lost by this complaint. These teeth are the least subject to *decay*, of any teeth in the mouth, for the following reason.— Under the tongue, and near these teeth, are placed two glands, which, during the action of the tongue, constantly emit a liquor, which passes between and over them, and in general washes away any food that might lodge there; particularly before it can become putrid.

Of the SCURVY in the GUMS.

ONE cause of the loss of sound teeth, and a very common one, is the scurvy in the gums; of which there are two kinds. One is

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known

known, by the gums being liable to bleed, on the slightest touch. The other, by a continual discharge of matter from them, issuing from the union of the gums with the teeth, without the least appearance of blood. These descriptions hold good, frequently through the whole progress of the disorder, independent of each other; yet sometimes begin, and go on, jointly through the whole stage of it. Sometimes the teeth have *tartarous* particles adhering to them; and, in many cases, there is not any such substance, the teeth being remarkably clean. Sometimes the blood, or matter, is highly putrid; at others, free from it, or nearly so.

I HAVE made the following remarks on the scurvy in the gums, which will apply to either of the kinds mentioned above, or to both united. *In general* this complaint causes no pain: I say *in general*, because I have known some persons suffer much pain, and for a considerable length of time, with it. When a person has this disorder, the breath is not always offensive by it to himself, who is frequently an
entire

entire stranger to having any complaint in the mouth ; in some instances, for several years, till the teeth become troublesome in mastication from being loose ; at which time, it is common to apply to the dentist, to get them fastened, by some means which may cause the gums to grow to them again. When this disorder is much advanced, it is rare that any thing can be done to prevent the teeth from falling out, which they generally do, first one, then another, and so on, till there is not one left in the mouth ; every one often proving sound.

THE loss of all the teeth causes a diminution of the face, both in length and breadth. When all the teeth are out, it is common to see the face no larger than that of a child : for when they are all out, the face becomes, at least, two inches shorter, from the forehead to the chin, than it was before the teeth were lost, as the bony socket always wastes and is lost soon after the teeth are out. But when a person, who has lost all his teeth, has that loss supplied by a whole set of artificial teeth, the face then

becomes the size it was before the teeth were lost, or nearly so.

THE loss of the teeth, by this disorder, is owing to the destruction of their bony sockets, as mentioned above; the scurvy in the gums destroying it, if not timely prevented. So long as the bony socket remains perfect, the teeth do not become loose, except by the inflammatory tooth-ach, violence, or cold. If from cold, as soon as that is got clear of, the teeth get fast, without farther care. It may be necessary to observe, that all the teeth in the head move a little, when those in one jaw shut against the teeth in the corresponding one: or they may be perceived to move a little, when shook gently with the fingers. Therefore, what I mean by the teeth becoming fast, after all, or part of them, have been loose from cold, is, that they become as fast as they were before they were loosened by the cold.

THE teeth of some persons begin to fall out in three or four months after the scurvy makes
its

its appearance. I have likewise observed, that sometimes they will stay in several years from its commencement, before one is lost by it. Sometimes this disorder attacks one tooth only; and when that is lost by it, the mouth is free from the complaint (sometimes) for several years after. In this disorder, the gums do not always recede from the teeth, so as to expose their roots to view: for it often happens, that it destroys the bony socket and the connection between the gum and tooth, nearly the whole length of the root; and the gum appears, to look at, to have suffered no change: yet if a common probe, or the eye of a needle, be put between the gum and the root of a tooth so diseased, it may be introduced to a considerable depth, without causing pain.

WE see that the scurvy in the gums, sometimes, leaves the *anterior* or front part of the root of a tooth bare, (more particularly of the front teeth in the upper jaw,) destroying the bony socket; the sides and back part remaining

for some time unaffected : the front appears as if the gum and bony socket had been cut away.

It is common, in this complaint, to perceive a tooth drop down gradually lower than the adjoining ones in the upper jaw ; and for the corresponding one, in the under jaw, to rise in the same proportion. This is owing to the loss of the bony socket at its margin ; which, being in part destroyed, permits the tooth to start and move from its original situation. It is not, in my opinion, occasioned by the alveolus, or bony socket, filling up at the bottom. When a tooth in one jaw is drawn, or its top decayed away, so as to leave the opposite one, in the corresponding jaw, unopposed ; it generally rises gradually out of its socket, and in the course of a few years sometimes comes entirely out ; though I have seen teeth, that have been unopposed for many years, that have not moved out of their original situations. When they project out of their places, the gum not being diseased, it is not often that they become
loose,

loose, although one third of the root may be perceived out of the gum. So long as the teeth in one jaw are properly opposed to those in the corresponding one, they never project, or rise out of their places, except in inflammations of the neighbouring parts of the teeth, as, the inflammatory tooth-ach, &c. and, in those, so little, as not to be discovered with the eye, but may be by the patient, as he perceives he touches the diseased tooth with the teeth in the opposite jaw before any other; and when the complaint subsides, the diseased tooth settles into its former place.

THE idea, which some people entertain, of the gum growing up to the enamelled part of the teeth, or to any part of the roots when it has receded in consequence of the scurvy in the gums, or by tartarous concretions adhering to the roots of the teeth, is not founded in practice. This opinion may have arisen from the following causes. When a small part of the gum shoots up between the teeth, even, or nearly so, with the top or edges of the

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teeth,

teeth, a person not conversant with the gums, on looking at them, supposes the gum has receded from the front of those teeth; and should these rising parts be reduced by the knife, or any other means, the patient generally thinks the gums have of course grown up to the teeth. I believe it is often very easy to prevail on the patient to think they have grown; but it is only a deception of the operator, to raise the opinion of the patient in his favour. The most that can be done in this situation, as far as my observations have informed me, is, to prevent this disorder from going farther; which, in most cases, may, if proper means are used in time. The dropping out of sound teeth, is not confined to persons advanced in years; I have seen many of seventy, and eighty years old, whose gums, bony socket, and teeth, have been in as sound and perfect a state, as any I ever saw. I have likewise seen healthy, strong people, and many who *never* were out of health, lose several of their teeth before the age of twenty-one; and great numbers who had lost several by this disorder

disorder before they arrived to their thirtieth year. The scurvy in the gums *never* extends farther than the muscles of the cheek, or tongue, seldom so far; and what may appear extraordinary, is, persons who lose all their teeth by this disorder, never have the least appearance of it when all the teeth are out. I never knew *medicine*, taken internally, have any apparent effect on this disorder; I mean *calomel*, and the *Peruvian bark*: what effect any others would have, I know not; as I never knew any other used for the intention.—Bathing in the sea has been tried for it, but, in my opinion, without advantage.

EXCLUSIVE of these causes of the teeth dropping out sound, their loss is sometimes occasioned by *venereal infection*, or the improper use of *mercury*; which do not affect the teeth only, but, sometimes, some of the bones of the head likewise. I never knew any bones lost by the scurvy in the gums, the teeth and their bony sockets excepted.

IN the Treatise on the Teeth, alluded to at p. 47, the author informs us (p. 69) of a case of a tradesman, who had the *incisors* of both jaws entirely naked to the very extremity of each root; and that, by cleaning the teeth, and scarifying the gums, five or six times, and using stimulating balsams, in six weeks the gums were completely restored, and remained sound after, by the assistance of astringent washes and brushing.

SUCH cases as the above I have frequently seen, but never cured one, or saw one of the same kind, or any thing like it, cured by any other person.*

BEFORE I close my observations on the dropping out of the teeth from the scurvy in the gums,

* I AM sorry to say, I have not seen any publication on the teeth, by a practical dentist of this kingdom, which I think can render the art any material advantage: for when opinion is substituted for practice, however plausibly and speciously delivered, it must do injury; but more especially so, in proportion
to

gums, I must again repeat, that when the smallest part of the roots of the teeth are exposed, in consequence of the adhesion of tartar on them, by the scurvy in the gums, venereal infection, or the imprudent use of mercury, I never saw the least disposition in the gums to grow to the teeth, although assisted by *scarification*; or by *stimulating, balsamic, astringent*, or any other sort of, *washes* or *applications*: the gum would as soon grow to a piece of *ivory* or *iron*, as to the root of a tooth which had lost its periosteum from any of the causes here alluded to. When the exposure of the roots of the teeth is occasioned by accident, as a bruise, a cut, or the like, it will frequently be readily

to the writer's elevated rank in his profession. I do not consider Mr. J. Hunter's Natural History of the Teeth as the production of a practical dentist; but, of a very accurate anatomist; in the perusal of which, I have met with much pleasure and several ingenious and instructive observations; and to which I refer those who expect to find a regular description of the human teeth and their connections; having chiefly confined myself to the practical methods of preventing or relieving the disorders to which they are subject.

restored

restored by nature, generally without the assistance of art.

It may not be improper here to remark, that I have seen many people, whose gums have been much affected with the scurvy, and the body at the same time free from the scurvy. I have also seen many people much afflicted with the scurvy in the body, who have had the gums free from the scurvy. I have also often seen, in the same person, the scurvy in both the body and gums; and that when the gums have got well, the scurvy in the body has not been in the least relieved: by which it appears, that these disorders are of a distinct nature, not having *in general* any connection with each other.

I HAVE likewise seen many people of scrophulous habits, with large glandular swellings about the neck, who have had the teeth and gums free from any complaint. I have also seen many people with the above appearances, whose teeth and gums have been in a very
unhealthy

unhealthy state : so that it is possible the teeth and gums may not be particularly affected by the scrophula.

WHEN the teeth become loose by any of the causes above mentioned, it is not uncommon for an inflammation to commence in the membrane, or periosteum, occasioned by irritation from the almost constant motion of the teeth. When this happens, it is generally necessary the offending tooth, or teeth, should be taken out.

MYRRH is frequently recommended, in powder, with other ingredients, for the scurvy in the gums ; as likewise the tincture of myrrh, with the addition of some distilled water, or such like vehicle, but without any good effect, as far as my observations have extended. I apprehend when myrrh is used for the scurvy in the gums, it must rather confine the blood, or matter, in them, than be a means of clearing them of such impurities : I never saw the scurvy in the gums relieved by the use of it, although

although *myrrh* is reckoned an antiseptic. When used as an ingredient in a dentifrice for cleaning the teeth, it must, from its sticking quality (in common with all resinous gums) rather make the teeth foul than clean.

JESUIT'S BARK is frequently recommended for the scurvy in the gums. I never perceived any advantage by the use of it for this complaint: it is often recommended alone, in powder, to clean the teeth. This drug, I believe, will not injure the teeth; but, from observation, it appears, that the use of it for this purpose changes the colour of the enamel to a yellow, or yellowish brown, in some degree inclining to the colour of the medicine used. Some teeth have the enamel changed with it in less time than others. An acid, as *cream of tartar*, joined with *bark*, assists it in changing the colour, as well as being in itself injurious to them.

I HAVE frequently observed that when people have had an overflowing of the gall, the enamel
of

of the teeth has become of a more yellow colour than usual; and that when that complaint has subsided, they have regained their former colour, without using any means for that purpose. From this circumstance, I apprehend, we may be convinced that the enamel of the human teeth has lymphatic vessels.

*Of the Means for preventing or curing
the SCURVY in the GUMS.*

TO prevent the progress of this disorder, when it threatens, I have not found any method succeed so well as to use daily, in the morning, an *abstergent lotion*, which I recommend for the scurvy in the gums,* taking care
to

* A BRUSH should be dipped in about a meat spoonful of the lotion, and the gums brushed briskly with it, but not so as to make them sore, for about a minute; the remainder should be taken into the mouth, and
kept

to have any small portions of tartarous matter that may adhere to the teeth, under the edges of the gums, (which is seldom discovered by the person himself till a large quantity of that substance is collected) removed by the instrument of a careful dentist: the patient using a proper dentifrice, such as recommended *p.* 17, so frequently as to keep them as clean as possible.

WAS this treatment strictly attended to, I believe the scurvy in the gums would very seldom make its appearance; and when the gums are only recently affected with this disorder, the same treatment is generally sufficient

kept there five or ten minutes, rinsing the mouth with it all the time.

THE *lotion* here alluded to is such as I recommend, and is peculiar to my own practice; and as it has in the course of an extensive practice fully answered my expectations, I am enabled with confidence to offer it in this place to the public. I hope the same reasons that have been offered when treating of the *dentifrice*, *p.* 17, will be thought a sufficient apology for not explaining its composition.

to

to prevent its farther progress : but when long neglected (and not incurable,) it is generally proper, during this treatment, to lance the gums, and sometimes to repeat it daily for a fortnight, a month, or longer. When the gums are much thickened by this disorder, considerable portions of them should be cut off, which in many cases I have done, and the patient has not been sensible of the least pain, till the operation has been repeated several times. The above treatment will, in most cases, answer every promise here offered ; it is a practice I have pursued many years, and have very seldom been deceived with it.

I HAVE frequently remarked when a person has had the scurvy in the gums, and by proper treatment it has been put a stop to, that the patient has neglected to pursue the rules above recommended, by which the disease has shortly made its appearance again, particularly when the gums have been in that state in which matter is discharged from them. Contrary to many disorders to which the body is liable,

when the scurvy in the gums once makes its appearance, if proper means are not daily used to prevent a relapse, it frequently returns again in a very short time.

It frequently happens that those who have the scurvy in the gums without pain, do not apply for assistance till the disorder has advanced to such a state as to be incurable; and that the loss of the teeth by it, is become certain, before they know the gums are diseased.

• LANCING the gums, to prevent the scurvy in them, is with some people a fashionable operation, and which they have performed regularly once a month; some once a week, or oftener; supposing it will prevent or remove *all* complaints of the gums, teeth, and their connections. By observation, however, this operation performed in such manner, by no means proves such expectation to be well founded. The operation, frequently repeated, may be lucrative to the operator; but in my humble opinion, is of little, if any advantage to the
teeth

teeth or gums of the patient. It appears to me that nature, whose natural operations we should assist, not direct, never intended that any of the blood with which the gums are supplied, should daily, weekly, or monthly, be let out by an instrument, which, I apprehend, must be an interruption to the design of nature, and not an assistance. If the circulation in the vessels of the gums is impeded or obstructed, it appears to me proper that we should endeavour to remedy such defect by means more easy; and which may, I have sufficient reason from experience to believe, be done effectually, by the treatment already recommended; provided the patient will adhere strictly to the rules advised.

THIS situation of the gums, and the circumstances attending them, resemble, in some degree, the body in general. The washing and brushing of the gums are, to the gums, what air and exercise are to the body; as they give vigour to the circulation of the blood, and tone and strength to the solids; whereby the

health of the whole is preserved, without other and more artificial assistance.

I HAVE frequently remarked that people are inattentive to their teeth and gums in a week, a fortnight, or month, after any operation has been performed on them by a dentist, by which the complaints soon return.

Experiments made with the ABSTERGENT
LOTION.

AFTER using the *abstergent lotion*, above recommended, for several years, in a variety of cases of the scurvy in the gums, with every advantage I could wish, I was of opinion it was no way detrimental to the teeth: but as this was founded in opinion only, which is so liable to mislead, I made the following experiment to confirm it.

To

To two ounces of the *lotion*, in a four ounce phial, was put a sound, well enamelled human tooth, and corked close. The bottle was set in a warm room, where it remained one month. The tooth was then taken out and examined; and having suffered no change, it was returned into the same lotion, and kept in the same room for two months longer; during which time the bottle was left uncorked. On examining the tooth after being in the lotion three months, it had not suffered the least alteration. This experiment was repeated with several human teeth, with the same effect. After such a proof, I apprehend I may truly say it will not injure the teeth.

THE following experiment was made. A piece of putrid flesh was put into one ounce of this lotion, and shook briskly for two minutes: it was then removed into two other like quantities of the *lotion*, and treated in the same manner as in the first, being allowed to remain, after the agitation, five minutes in each: and, when taken out of the last, it had lost its putri-

dity. By this last experiment, its antiseptic quality is proved; and that it is consequently proper to correct the putrid quality which food acquires when long retained between sound, or in decayed teeth.

Experiments and Observations on PREPARATIONS for CLEANING and WHITENING the Teeth.

ALL preparations that, from a particular chemical quality, whiten the enamel of the teeth, are, without exception, improper, as being chemical solvents, which are always composed of acids, and generally mineral acids. Suppose we take of strong spirit or oil of vitriol, one ounce; common water, a pound (which is a pint;) add, by a little at a time, the vitriol to the water, till the whole is mixed; to which add one ounce of the
syrup

fyrup of clove-gillyflowers, or the fyrup of red poppies. This is a liquid that is generally recommended for cleaning or whitening the teeth; with this difference, that sometimes a greater or less quantity of the vitriol is used. The fyrup has no efficacy or use, and is added for no other purpose than for deception, and to please the eye. Sometimes the fyrup is left out; which induces many people to think the preparation must be perfectly harmless, because it is as clear as spring water. To come to the truth of the effect of this mixture on the human teeth, I made the following experiments.

NOVEMBER the first, I took three four ounce phial bottles, which I shall distinguish by No. 1, 2, and 3. Into each I put two ounces of rain water. To No. 1 was added two hundred and forty grains of the strong spirit or oil of vitriol. To No. 2 was added a hundred and twenty grains of the same. To No. 3 was added sixty grains. These were set

in a warm room, over a kitchen that had a fire in it, day and night. At eight o'clock at night, into each phial was put one well enamelled human tooth of the upper jaw; at twelve the same night, that in No. 1 had deposited, at the bottom of the phial, a small portion of its enamel, in the form of a white powder; and small particles of the same were to be perceived frequently separating.

THE tooth in No. 2 had deposited a small portion of the enamel in the same manner; much less than the first; and which could only be perceived by a very attentive inspection.

THE tooth in No. 3 had not deposited any of the enamel, but was of a chalky white, having, in part, lost its transparency. The root of each tooth appeared the same as when put in, except that a few air-bubbles were observed upon the extremity of the roots, which adhered to the surface, and
did

did not move when the bottle was gently agitated.

THE second day, the appearance in each phial as at twelve o'clock the preceding night; the deposition in No. 1 and 2 increasing. The third and fourth days as the second. On the fifth day, a slight sediment might be observed in No. 3. This day those parts of the roots where the air-bubbles had been observed, now became transparent, and no air-bubbles remained; the deposition from each tooth advancing in proportion to the quantity of the vitriolic acid in each bottle, and continued to do so till the tenth day; when, that part of the root of the tooth of No. 1, which had been transparent, became opaque, as did that in No. 2 a few days after. On the thirteenth day, the part of the root, above alluded to in No. 1, was rough. On the fourteenth day, I suspected the enamel of the tooth in No. 1 was all dissolved; I therefore took it out, and washed it in common water, when
there

there was not the least part of the enamel remaining. No farther experiment was made with this tooth.

THE teeth in No. 2 and No. 3, daily deposited their enamel in the manner above mentioned, till the twenty-fourth day, when I suspected the enamel of that in No. 2 was destroyed. I took it out and washed it as I had done that in No. 1, and found the whole of its enamel was destroyed.

THE tooth in No. 3 was this day examined in the same manner: the greatest part of its enamel was destroyed: it was returned into the liquid from whence it was taken, where it remained till the thirtieth day; it was then examined, and washed as the others had been, and no enamel remained.

I WAS surprised to find, in these experiments, that the tooth in No. 1 had lost the whole of its enamel in fourteen days, and that it required only thirty days to
destroy

destroy the enamel of the tooth in No. 3, in which there was only sixty grains of the vitriolic acid; whereas, No. 1 contained two hundred and forty grains. It shews that a weak solution of the vitriolic acid destroys the enamel of the human teeth, in less time, in proportion to the quantity of the acid used, than a strong one.

THE teeth used for these experiments were as nearly alike as possible; they were the second teeth in the upper jaw, and, in their textures, naturally strong; and it is very probable each of these teeth, by their appearances, would have lasted the people, in whose heads they grew, a hundred years, and have been found at the end of that time, had the persons lived so long.*

ON examining the teeth used in these experiments three days after the last was taken out

* It is no way difficult, for a person conversant with the teeth, to know which are not likely to decay, allowing the person to be upward of twenty years of age, when that opinion is given.

of the acid, I perceived about one sixth of the length of the root in No. 1 destroyed, the remainder being rough; the root of the tooth in No. 2 had lost about one eighth of its length, the greatest part of the remainder being rough. No. 3 had lost very little of its length, a part of it was also rough.

THE spirit of salt is sometimes used for whitening the teeth. This will destroy them in less time than the vitriolic acid.

THESE are the *liquids* generally used for cleaning or whitening the teeth.

ALUM, either burnt or unburnt, cream of tartar, and the tartar of vitriol in the acid state in which it is commonly met with, are what are in general use, mixed with other ingredients, in the form of powders, electuaries, &c. to clean or whiten the teeth; and are as destructive to them as the vitriolic acid, in proportion to their different degrees of acidity. It is immaterial whether a dentifrice is a subtle powder, or in
any

any other form, when it contains an acid, as it is certain to destroy the teeth, sooner or later, according to the strength of the acid, and the disposition of the teeth to be acted upon by it.

MANY powders, pastes, electuaries, &c. &c. recommended for cleaning the teeth, although they have no acid in their composition, are as destructive to the teeth as those that contain acids.

NOTWITHSTANDING these palpable facts, we daily see, advertised by dentists (and some of reputation) dentifrices and liquids under the title of *astringents*. Sometimes the proprietor has the address to annex some captivating title; and has the modesty to assure the public they are “proved by *long experience* to be infinitely more efficacious for the teeth and gums than any thing yet discovered; preserving the teeth to old age; rendering them white and beautiful, *without impairing the enamel*,” with several such like promises.—The most favourable imputation that can be given to such conduct,

duct, is, *ignorance*; any other comment must ascribe it to a more unpardonable cause.

IN general those who are employed as venders of any preparation for the teeth or gums, make it an invariable rule to recommend such as afford the greatest profit to *themselves* in the *sale*; being utter strangers to their good or bad qualities and effects.

I WAS applied to some months ago by a gentleman, who informed me he had, for several months past, used powdered alum to clean his teeth with; and that, as it soon made them very white, several of his acquaintance observed it, and enquired of him what it was that he used to clean them with; on his telling them *powdered alum*, many of them used the same. The most of them that did so, had their teeth become painful in a month or six weeks after; and soon afterwards lost some of them. I told him the alum was the cause of pain and loss of the teeth, and that it would do the same to his, did he continue the use of it. He said he had
for

for some time felt a disagreeable chilness of them, which he was not accustomed to. On my acquainting him the alum he used was the cause, he said he would not use it again.*

THIS gentleman's teeth, I apprehend, contained a larger proportion of oil than many do. In the various experiments I have made on the teeth, I shall here mention one to prove the truth of this assertion; as I am aware, without some proof, I may be censured by many for such an opinion.

I HAVE several times taken a common wine-glass full of common household vinegar; into which I have introduced a sound, well enamelled human tooth; on taking it out, sixteen or

*I HAVE often remarked, that the teeth of those persons who have used acids for cleaning them, are most liable to break in extraction. I have also observed the same to happen with those who are much subject to acidities in the stomach; and which most likely happens, in both cases, from the teeth being rendered more brittle by a partial privation of their oil or oily substance.

eighteen hours after, I have found several hollows in the enamel, evidently corroded by the vinegar, in appearance something like what is seen in iron when pitted with rust. All the teeth used in this experiment were not corroded alike in the same time. When I have found the dissolution go fast forwards, I have in sixteen or eighteen hours, taken the tooth out of the vinegar, and immerfed it in Florence oil; where it has remained three or four days. On examining it then, I have found the dissolution stopped; and on returning it into the vinegar, the tooth has not appeared to be in the least affected by it for many hours.

I HAVE put several sound human teeth in oil, where I have let them remain till soaked through; of which I was satisfied by their transparency. These I put into vinegar as above; but which had no effect on them, to appearance, in ten days.

It may not be improper to observe, that as all bones contain a portion of oil, or oily matter,

ter, the bony and enamelled parts of teeth have a certain portion of it likewise in their composition: and as we find that some teeth are much sooner destroyed by using acids to them than others, I think I may say with great confidence, that the above gentleman's teeth contained a larger portion of oil than those of his friend's; and which was the means of their preservation. This is my opinion, the learned reader is at liberty to judge of it as he thinks proper.

It appears to me, that when a tooth is immersed in an acid, the acid extracts and dissolves the oil contained in it, by which the enamel of the tooth becomes decomposed, and, of course, separates from the bony part; and that the slighter or weaker applications of acids, act in the same way in a more gradual manner.

FROM these experiments and observations, it should seem, that those teeth which contain the greatest quantity of oil, will be the

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healthiest,

healthiest, and will longest escape that grand destructive cause — *acids*; — and which is in general the case, as teeth which have a yellowish cast (from the large proportion of oil which they contain) are in general the most lasting and durable; and that teeth of a chalky whiteness soonest fade and are acted upon and destroyed by acids.

Of that disagreeable SENSATION, commonly expressed by, THE TEETH BEING SET ON EDGE.

THE teeth may be set on edge from two very different causes. One, occasioned by the application of acids to them: the other, from jarring or grating sounds.

It has already been proved by experiments, page 127, that a quantity of oil or oily matter
enters

enters into the composition of teeth; and that the teeth, when deprived of a portion of it by the external application of acids, may have it restored to them again by immersion in oil: it therefore cannot be doubted that the enamel of the teeth is porous, and that a certain quantity of that oily matter regularly transudes through it, no doubt chiefly for the purpose of defending it from abrasion and attrition in mastication. Whenever therefore acids are taken into the mouth, they generally dissolve and take off the oily matter from the extreme surfaces of the teeth: hence, when the grinding surfaces of the teeth, in the upper and under jaw, come in contact in mastication, or otherwise; or, on being touched with most substances; the disagreeable and painful sensation, which, is to be perceived on such an occasion, ensues, for want of the lubricating quality of the oily matter; as that unpleasant effect soon is relieved, or ceases, upon the application of any unctuous or oily substance, as, cheese, butter, &c. to the teeth.

WHEN the teeth are *set on edge* from any grating sound, I apprehend it is occasioned, as well, by sympathy with the auditory nerves, as an immediate and direct effect upon the teeth by the vibration of grating sounds.

Of SUPPLYING the loss of TEETH by ART.

THERE are various methods of accomplishing this purpose. The first I shall mention, is, the transplanting of teeth out of one head into another.

THE transplanting of teeth is a desirable operation, when it succeeds; but it may not be improper to observe, that the success in a great measure depends upon chance.

A DENTIST may know which tooth is proper for the purpose to be transplanted, as, whether

it is a perfect one; whether the enamelled part is of a proper size, with respect to length, breadth, thickness, and so forth; but he cannot know whether its root will correspond in shape and proportion with that of the one whose loss it is to supply, till they are both drawn; as it is well known the roots of teeth vary in these circumstances, notwithstanding the external and enamelled parts perfectly accord.

WE will suppose a person desirous of having a decayed tooth taken out of the front of the mouth (for this operation seldom succeeds for the double teeth, particularly any of the twelve large ones,) and a sound one transplanted into its place. If the root of the tooth to be transplanted differs much in shape and size with the one it is to replace, particularly when too thick or long for the socket, it is necessary to file it so as that it may go into the socket; but the filing takes off a part of the periosteum, or membrane, which grows to the roots of all teeth when perfect; and such operation prevents an union of that part of the tooth

with the gum and membrane, or lining, of the socket ever after: and though the part of the root which was not filed, grows to the gum and the membrane which lines the socket, yet there is a collection of matter constantly forming in the socket which discharges itself into the mouth during the time the tooth remains, though it should stay in several years, occasioned by this circumstance of the portion of the membrane of the root being filed off. The matter is daily discharged, generally either by an orifice formed in the gum near the root of the transplanted tooth, or by an opening between the tooth and the gum. I have seen several people who, from this cause, have been under the necessity of having teeth, which had been transplanted into their mouths, taken out some time after the operation, (though the transplanting was performed by dentists in London in the most esteem for this operation,) to prevent more disagreeable consequences. But when a tooth is transplanted, the root being *smaller* than the one it is to replace, the gum will generally grow to it; yet if the person on whom the
operation

operation is performed is not young, it often never grows fast. What I here mean, is, the tooth is not kept steady in its place by the bony socket, but is liable to move on any slight occasion.

THIS operation is almost certain to succeed when the root of the tooth to be transplanted fits properly the socket for which it is intended; the bony socket, gum, and tooth, being in a healthful state; which is easily known.

By the above observations I think it will appear, that the success of this operation must depend as much on chance as the art of the operator.

WHEN a tooth is transplanted, it is secured in its place by ligatures to the adjoining teeth, for several days, till the gum grows to the root of the tooth.

WHEN this operation is performed, a physician should attend the patient to regulate the

fever, which, with some people, is considerable; with others, trifling. I have reason to think the performing of this operation has been of disservice to some patients: for I have seen several young persons, who have, for a long time, been under the care of dentists who perform this operation judiciously, having several of their front teeth at the same time decayed, without the least attempt being made to prevent their farther decay. I cannot suppose any dentist so ignorant of his profession, as to think nothing should be done to endeavour to prevent their farther decay: I am rather of opinion such omission has been in expectation, that, when the teeth were farther decayed, the patient must have others transplanted in their places; or, that the dentist has not been properly gratified for his attendance; which latter I believe is sometimes the case, and which no doubt is one cause of various operations on the teeth, either being superficially performed, or entirely neglected. When young persons, of either sex, are at boarding schools, the regulations of the schools seldom admit of time sufficient

cient for performing the proper operations on the teeth, (the extraction of teeth excepted,) which, as has already been observed, are requisite to be frequently performed: at least I have generally found this to be the case. It likewise seldom happens that the dentist has a sufficient discretionary power to make use of all the necessary means for that purpose. There is an operation I have frequently performed with success, though not always, that may be mentioned in this place. It is, when a tooth gives pain and the nerve cannot readily be destroyed, to take the tooth out, cut the decayed part away, stop the hollow with gold, and then replace it: if it is returned into its place without being stopped, and even becomes fast, it will decay as quick as if it had not been drawn; but, by having this operation performed carefully, the tooth so replaced will often answer as well through life as if it had never been diseased. This operation will not frequently succeed in the inflammatory tooth-ach.

If a sound tooth should be drawn by mistake, it ought to be returned into its place ; or should a tooth, by accident, be beat out, as is sometimes the case from a fall, in hunting, &c. such tooth, if it can be found, should be replaced immediately, taking care to wipe off the dust or dirt that may have adhered to it. In some cases this will be all that will be necessary ; should it not readily remain in its place, it may be tied to the adjoining ones with a little thread. But as preventive means are generally the best, I shall here recommend a method which, if practised, will almost make it impossible to have any of the teeth beat out by a fall or otherwise in hunting. Let a person who rides, make it a rule to shut the teeth in each jaw close together whenever he takes a leap. It may at first appear awkward, but a little practice will soon reconcile it. After he has acquired this habit, should his horse make a false step, either in hunting, or on the road, he will naturally and involuntarily close his teeth together. When the teeth are beat out, it is, I believe, always when the mouth is more or less open ;

open ; for at that time, a small force will readily beat out any of the front teeth, or break them : those in the upper jaw are what generally suffer. But when the mouth is shut, by which the teeth in the upper project before and are in contact with those in the under jaw, they are both supported, and would, I believe, take twenty times or more the force to displace or break them.

I HAVE sometimes seen people with one or both the front teeth in the upper jaw much yellower over the whole of the enamel than the other teeth ; and some few, where the whole of that part was of so dark a colour, that they appeared to be very much decayed ; though they were, on the closest examination, found to be perfectly sound.* On enquiry I have generally been informed that the person has, at some former period, received a blow on such teeth ; and that the teeth changed their former appearance from that time, or very soon after.

* I NEVER met with one instance of any disorder originating in the internal part of a sound tooth.

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When the yellowness extends over the whole of the enamel of such teeth, it is not in appearance like that I have mentioned in the description of the effect of the small-pox on the teeth, or the yellow marks which I have likewise observed are sometimes seen on, and frequently through, the enamel of some teeth. As I never saw a tooth which was wholly discoloured from either of these latter circumstances, I apprehend the above general discolouration of such teeth, is the effect of a bruise, or blow, as mentioned above; as we observe, that the more hard and solid the part of the body that receives such injury is, the longer it retains the external effects of pain, discolouration, &c. and *vice versa*.

I HAVE seen others of the front teeth discoloured in this manner, but not frequently.

ANOTHER method of supplying the loss of teeth by art, is, by fixing the crown or enamelled part of a sound human tooth to the root of a tooth of which the enamelled part is wholly,

wholly, or in part, decayed or broken. This is done by filing each properly, and uniting them by the assistance of a screw of gold or silver; and which may be done so completely, that it is sometimes not without difficulty they can be separated; in some instances, for several years; provided the orifice in the root of the tooth, through which the nerve passes, is not much decayed.

THIS operation can only be performed where the teeth have but one root; neither can it be practised when the root of a tooth is out: but in this latter case we have another method of fixing natural teeth, by the assistance of an artificial socket.

THERE likewise are various methods of fixing artificial teeth, which frequently answer every intention of natural teeth, and often much better. It must be considered that some people, either from pain of the teeth, or from their being loose, cannot masticate their food, sometimes for several successive years. We
will

will suppose a person in this situation when he applies to a dentist, who takes out the teeth which are painful, and, in their places, fixes artificial teeth that are made to fit the gum and adjoining teeth properly; he can, with such artificial teeth, masticate his food without pain, and in general they are more ornamental than his own had been for a long time. A case I lately saw may not be improper to be related here.

A LADY, aged about twenty-three, applied to me some months ago: she informed me, she had frequently suffered pain with her teeth, ever since she could remember; had had several drawn; some had dropped out after giving much pain; and desired me to take out every tooth she had left, as she had pain of them all, and make her a complete set; for that, in her present situation, she had no comfort.

I EXAMINED her mouth, and found none in the upper jaw which it was advisable to keep in, except the dens sapientiæ on the right side, and two roots of double teeth, which I filed even with the

the gum, and which I was of opinion caused no pain.

IN the under jaw there were eight sound teeth in the front of the mouth; and behind these all were decayed; but some of them gave no pain. She had sympathetic pains of the sound teeth, occasioned by some of the decayed ones. I recommended her to have such of the teeth out as I imagined requisite; but to keep the eight sound teeth in, as also such others in the same jaw as appeared likely to be of service; and to have the loss in the upper jaw supplied with artificial teeth. This she objected to, saying, that as she was afraid she should continue to suffer pain of her own teeth, if any were left in, she was determined to have them all out. Upon my representing to her that such a proceeding was perfectly needless, she reluctantly complied with my entreaty to let them remain in; but not till I had promised to take the eight teeth out hereafter, if I did not succeed to her satisfaction. I took out what teeth I thought proper,

proper, and supplied the deficiency in the upper jaw with artificial teeth.

I HAVE seen this lady several times since, and have often received her thanks for advising her as I did; informing me, since the operation was performed, she had received more comfort than she ever did before since she could remember, with respect to her mouth; as she could masticate most sorts of food with ease.

THIS case proves the truth of the above assertion; but to suppose that artificial teeth can be made to answer as well as teeth which grow in the head, and are in a perfect healthful state, would be absurd. They who make such promises, I apprehend, intend to deceive.

WHEN one, two, or a greater number, (not a whole row) is made, the general method of securing them in their places, is, by ligature to the adjoining teeth; which is done with silk, unbleached thread, Indian weed, (or sea grass,) filkworm gut, or by, what is worse than any
of

of them, gold wire, which I never recommend, but sometimes use at the request of the patient.

WHEN persons have lost all their teeth, they may be supplied with a whole set of artificial ones, which answer the purpose very well, and are retained in their places by the assistance of springs made of gold. In making artificial teeth, the part which joins to the gums may be made to imitate the gum, when stained of a proper colour. This deception looks very well at first, but I never stained any myself, or saw any stained by others, but that the colour was discharged in a short time.

THE objections made to artificial teeth, are, they soon turn yellow; cause the breath to be offensive; are not fast; that they loosen the adjoining teeth to which they are tied, and cause them to drop out; and, in cases of whole sets, that they always become troublesome and useless in mastication.

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WHEN artificial teeth are made of *common bone*, or *ivory*, they generally soon turn yellow; but when made of the *sea-horse tooth*, which they ought to be, they seldom do; and, when the enamel is on, never do. (Several years ago I invented a method of making whole sets of artificial teeth, with the enamel on every tooth.) That they cause the breath to be offensive, is, in some instances, true; for, there are many people, who will not take the trouble of cleaning their own teeth; on which account, the breath is frequently extremely offensive, (as has been remarked in the former part of this work,) and should a person who is so negligent of his own teeth, lose any, and have artificial ones in their places, and take no better care to keep them clean, they must of course soon become offensive, in common with those of his own; but, if a person who wears artificial teeth, is careful in washing and cleaning them, I believe they will seldom or never make the breath offensive, except they decay; for it must be observed, they are, as well as a person's own teeth, liable to decay,
and,

and, of course, if not kept clean, must be offensive in common with natural decayed teeth.

THAT they are not fast, is, also, in some instances, true; for if they are not made properly, so as to fit exactly the gum and teeth to which they are united, they never can be fast; but which is owing to the teeth not being well fitted by the operator.

WHEN they are made exactly to fit both the teeth and gum, the person often, either through fear or inattention, does not keep them constantly fast tied; when this is the case, the artificial teeth, though ever so well made, do not properly support the adjoining teeth, but act as a weight fastened to them, which, by constant motion, will undoubtedly pull them out. But when artificial teeth are made to fit exactly the adjoining ones to which they are united, as also the gum, and care taken that they are constantly tied fast, they support and keep in the adjoining ones, much longer than

they would stay in without. Exclusive of the above reason for the natural teeth being loosened when artificial teeth are used, the same disorder that is the cause of the loss of one tooth, and which first makes an artificial one necessary, may, and often does, cause the loss, not only of the teeth to which an artificial tooth is tied, but, of every tooth in the mouth; as has been before related when treating of the scurvy in the gums.

WITH respect to the last of the objections above enumerated, viz. that of a whole set of artificial teeth being *always troublesome and useless in mastication*; I have to observe, that, sometimes, they are so; but, much more frequently, otherwise; and that, in general, they may be used in eating with the greatest pleasure and satisfaction.

As the loss of front teeth frequently affects the speech, so artificial teeth, when the natural ones are wanting, are of the greatest use in speaking; in public speaking particularly so,
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on many accounts. I was lately applied to by an officer in the army, to supply him with two artificial teeth for the front of the upper jaw. He informed me, that having daily occasion to speak loud in the exercising of the soldiers, he found great difficulty in giving the word of command intelligibly; and that from uncommon exertion and much straining (not being of a strong constitution) he had brought on a pain of his breast. He informed me, a short time after the teeth were fixed, that he found himself able to speak much more distinctly and with great facility, and that he had lost the pain of his breast.

*Observations on Persons who LOSE ALL
their TEETH.*

WHEN the lips are long, which some people's are, their teeth, even allowing them not to have lost one, are seldom seen

in conversation. When persons, so circumstanced, lose all their teeth, it affects the speech but little, in general; but when the lips are so short as to shew, in conversation, half, or all, the enamelled part of the front teeth in either jaw, the loss of a single tooth, in, or near, the front, always alters the speech. In this case, every tooth may be considered as an organ of speech; for when one tooth is lost, the voice is altered; and when two, it is still more so; and continues to vary by the successive loss of every tooth in the front of the mouth. When the gums of a person, who has lost all the teeth, are very callous, such persons sometimes can bruise their food with them, but cannot separate it as if they had their teeth in a healthful state. Hence, by swallowing the food without chewing, it will not digest readily, and may occasion indigestion, and other complaints in the stomach. If the food is not properly and readily digested in the stomach, it turns sour; hence frequently arise those disagreeable, sour eructations generally accompanied with the heartburn. If
a person

a person is troubled with acidities in the stomach, and has lost none of his teeth, (for acidities in the stomach are produced by other causes exclusive of the loss of teeth,) if that acidity is not corrected, it will, from frequent eructations, greatly injure them. I have observed some persons have healthful and sound teeth in different parts of the mouth, but in such a situation, as not to be opposed to any other, having had the opposing ones drawn, or decayed, so that the roots only were left: or, some have teeth in different parts of the mouth that are so painful as to prevent mastication with them; on which account they dare not use the opposing ones that cause no pain, for fear of giving pain to those which do. Those so circumstanced, do not chew their food; and in such situations (and I have seen many such) are more unfortunate than if they had no teeth, except they will consent to have the painful ones taken out. Some people who have all their teeth in a sound state, and have no pain or inconvenience in mastication, yet from in-

attention, swallow their food almost without chewing. Any of the above causes may be, and I have no doubt are, often the occasion of acidities in the stomach, which, by rising into the mouth, greatly injure the teeth, as before related.

PERSONS, who want all the teeth, by swallowing portions of meat unchewed, are subject to have it stick in the throat, so as to threaten suffocation, and require the surgeon's assistance, frequently, to remove it.

Of the daily use of TOOTH-PICKS.

TOOTH-PICKS are, or should be, used only to remove portions of food which are daily insinuated, and lodge between sound teeth, or within decayed ones: for, if food, whether animal or vegetable, is allowed
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to remain in either of these situations a few hours, it will begin to putrefy. If the teeth are found, it will in general, if not removed early, cause their decay; and, if decayed, it will cause their farther decay. From these observations, I am led to conclude, that tooth-picks, used daily, to remove small portions of food from the teeth, must be proper. A piece of thread introduced between them; a brush with horse's hair, or hog's bristles, fixed in the end, in shape something like a painter's pencil; or a quill cut for the purpose; are the best I know. All metal for this use should be avoided.

*Of the Method of CLEANING the Teeth
with DENTIFRICE.*

WHEN a proper *dentifrice* is procured, dip a softish brush in cold water, shake as much out of it again as possible, then rub
it

it well in the dentifrice, and brush the teeth with it. This should be repeated every morning, should it be found necessary.

THE *colour* given to any dentifrice, whatever the form is, is of no benefit to the teeth. The articles generally used for this purpose, are, *rose-pink, drop-lake, dragon's blood*, or some such like ingredients.

THE *perfumes* given to them are not intended to increase their efficacy; they are of *Florentine-oris-root, musk, cloves, cinnamon, ambergrease*, or something similar.

P O S T S C R I P T.

A CASE has been mentioned, at *p.* 62, of a communication between the socket of the first small double tooth, and the antrum maxillare, having been formed in consequence of an inflammatory tooth-ach. Since that time (about a month ago, and two months since the tooth was drawn) the opening into the antrum is closed, the discharge from the socket and palate continues daily decreasing, and there is a fair prospect that the case will terminate favourably.

THE four dentes sapientiæ (which are the farthest teeth in the head, two in each jaw) appear through the gum at an uncertain age; rarely sooner than the sixteenth year (as has been mentioned in the description of the teeth.) The coming of these teeth is sometimes attended

tended with much pain, so that the glands of the throat are much inflamed by them. When this happens, the gum should be lanced, as recommended for lancing the gums of young children, and the other means used as there recommended, *p.* 3. Sometimes the progress of some of these teeth through the gum is very tedious, as well as painful, requiring several months for that purpose. When this is the case, I would recommend such tooth to be drawn.

Of FILING the Teeth.

TEETH are filed on various accounts, viz. to remove broken or jagged points, which happen either from accident or decay, and are liable to injure the cheek or tongue, as mentioned, *p.* 88; to stop the progress of a beginning or advancing caries; to round off the edges of teeth (though not decayed or broken) that grow irregular, and prove trouble-

troublesome to the cheek or tongue; and lastly, for ornament.

SOME universally condemn filing the teeth; on the other hand, some are for having all teeth filed. I am of opinion the best method would be to avoid these two extremes, because, I apprehend some teeth cannot be filed without being injured by it; others cannot be saved by any other method. It is in many cases necessary to file away large portions of a decayed tooth, when little or no alteration shall be discovered without a particular examination: others cannot be filed, but the alteration will be very apparent.

ALTERATIONS may often be made in the countenance by very slight alterations of the teeth by the file. I am aware some will suppose such an opinion imaginary; but those who have but a small knowledge of drawing or painting, will readily conceive the plausibility of such reasoning. I know of no operation that is performed on the teeth where more
judgment

judgment is required than in filing properly some teeth, as has been before mentioned, and no operation on them is in general more improperly executed. All operations on the teeth, which are hurried over, generally do more harm than good.

If every necessary attention was paid to the second set of teeth which they require, it is my opinion there would not be occasion to take out, for pain, more than one in a hundred of those that are drawn for it. I believe I am rather under than over the number in this calculation, provided we except those which are injured by the small-pox, (as described, p. 33,) and acidities in the stomach (see p. 151 :) which latter falls within the province of the physician to correct and obviate.

T H E E N D.

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